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RECENT POPULATION CHANGES IN SCOTLAND

By Catherine P. Snodgrass, M.A., Ph.D.

The real wealth of a country lies in its people and its natural resources. Its true prosperity depends on its people being well adapted in numbers to these resources, and on their making wise use of the natural assets and of their own talents to promote full life for themselves and to make a worthy contribution to the welfare of human society as a whole. Scotland is well endowed with natural resources for its five million people. According to expert opinion, it can produce all the food required to give them all an adequate diet on a full-health standard. It has adequate supplies of water, wool, building materials (except timber at present), coal, and resources for electricity as well as quantities of other useful or potentially useful materials such as oil-shale, fire-clay, lime, iron, bauxitic clays, flax, seaweed, peat. Moreover, its favourable geographical position, together with the skill in science and manufacturing of its people and their tradition of getting on well with the peoples of other lands, should enable goods to be made and exchanged, directly or indirectly, for timber, certain minerals and fibres, and tropical products which are lacking or present only in limited quantities.

How does Scotland stand with respect to population? Quantity, stability, and quality of population are all important factors. The latest figures of population change available to the public from which a balance sheet can be compiled are those of the 1921 and 1931 Censuses. In that ten-year period the population decreased by 39,517 or 0·8 per cent. This was the first decade since 1801 (date of first official census) in which the country as a whole had experienced a decline, although in the early twentieth century the rate of increase had slowed down considerably from the high figures of the mid-nineteenth. Such increases as did take place between 1921 and 1931 were chiefly in the cities and surrounding territories, a feature noticed by Dr. Chisholm in his analysis of the 1901-1911 changes.[1] The general rural decline has continued since 1911, but between 1921 and 1931 there were no increases associated with mining and fishing such as he noted in the first decade of the century (see Fig. 1A). The 1921 Census was taken in June, the 1931 in April. Some of the decrease in counties with important holiday resorts, such as Ayr and Fife, was no doubt due to this difference in date.

Except in parts of the north and west, the decline was not the effect of a loss of vitality, since births exceeded deaths in all but four counties (see Fig. 1B). In Scotland as a whole the excess amounted to 352,386 or 7·2 per cent. Within the country, however, there were great differences. The counties of the west and north and the Tweed Basin had very low rates, and in some of the former

the excess of deaths over births contributed to the decline of population. The rate of natural increase was greatest in the mining and metal industry areas and in Banff with its fisher folk. There were interesting contrasts between the cities: Glasgow had a rate of 8·4, Aberdeen 7·3, Dundee 6·3, and Edinburgh only 4·3. The low rates in the N., W., and S.E. were at least in part a consequence of the relatively small proportion of younger adults in these regions, but these and other contrasts cannot wholly be accounted for by differences in age composition. They may be due to differences in tradition and custom or religious belief, and in the case of low rates to a loss of faith in the future among people of provident disposition.

But whether the natural increase was negative, small, or large, there was generally a big loss of people by migration. The rate of loss was greatest in the Highlands, the more purely agricultural counties, the fishing areas, and in many of the mining and metal manufacturing districts. It was a paradox that this should have happened in the agricultural and fishing districts when at the same time there was widespread malnutrition and illness and a crying need for " protective " foods which large tracts of the country are so suited to producing. The rate was least in a few counties with central positions and varied economic activities and in some with agriculture plus textile manufacturing as predominant occupations. In Inverness-shire loss was low on account of increase in the burgh and the establishment of new industries using hydro-electric power in the S.W.

Loss by migration has been a feature of Scottish life since the late eighteenth century with its Highland Clearances. During the nineteenth century the rate varied greatly. It was highest in periods following the recurrent trade depressions which were such a distressing feature of laissez-faire industrialism. But since 1901 it has been consistently high. In each of the ten-year periods 1901-11 and 1911-21, approximately a quarter of a million people were, on balance, lost by migration, while in the post-war decade the loss reached the record figure of 391,903: 328,764 of these were gained by countries outside Europe and 63,139 by other parts of Europe, chiefly, it is understood, by England.

In the high birth-rate days of the late nineteenth century and in the early twentieth, no doubt some of the emigration was inevitable. In assessing this, however, the large Irish and smaller English immigration must be remembered. The early years of the nineteenth century saw the beginning of a large influx of Irish, especially to the new manufacturing districts of the Clyde Basin,[2] and by mid-century fully 200,000, or 6 per cent. of the population, were Irish born. Since 1881 the numbers have fallen off. In 1931 there were 124,296 (2·6 per cent. of the population), not including the children of Irish parents. The English and Welsh born, on the other hand, increased fairly steadily from 56,032 in 1861 to a maximum of 194,276 (4 per cent. of the population) in 1921.

But the mass exodus of the 1920s (80,000 in 1923 alone) was a veritable national débâcle which not even the most virile of peoples could withstand for long. The result was that in 1931 Scotland had relatively few young adults compared to most countries inhabited by European peoples, and this in its turn had important repercussions on economic and social life and future population. It seems strange that this exodus should have taken place while we had unused, or only partially used, means of obtaining the necessities of life in adequate measure.

Estimates made by the Registrar-General indicate that the decline in population did not continue after the great World Depression, and by 1941 the population had reached fully five million, giving an increase of 3½ per cent. in the decade 1931-41. Since 1931 overseas emigration has practically ceased; in fact, some former emigrants returned home. In the absence of data it is impossible accurately to assess the trend of the emigration rate to England during this period, more especially as some of the post-Depression movement to the English Midlands was Government-sponsored and much since 1939 Government-enforced. But it is important to realise, on account of possible economic, social and population effects, that most of the people concerned in both these movements were young

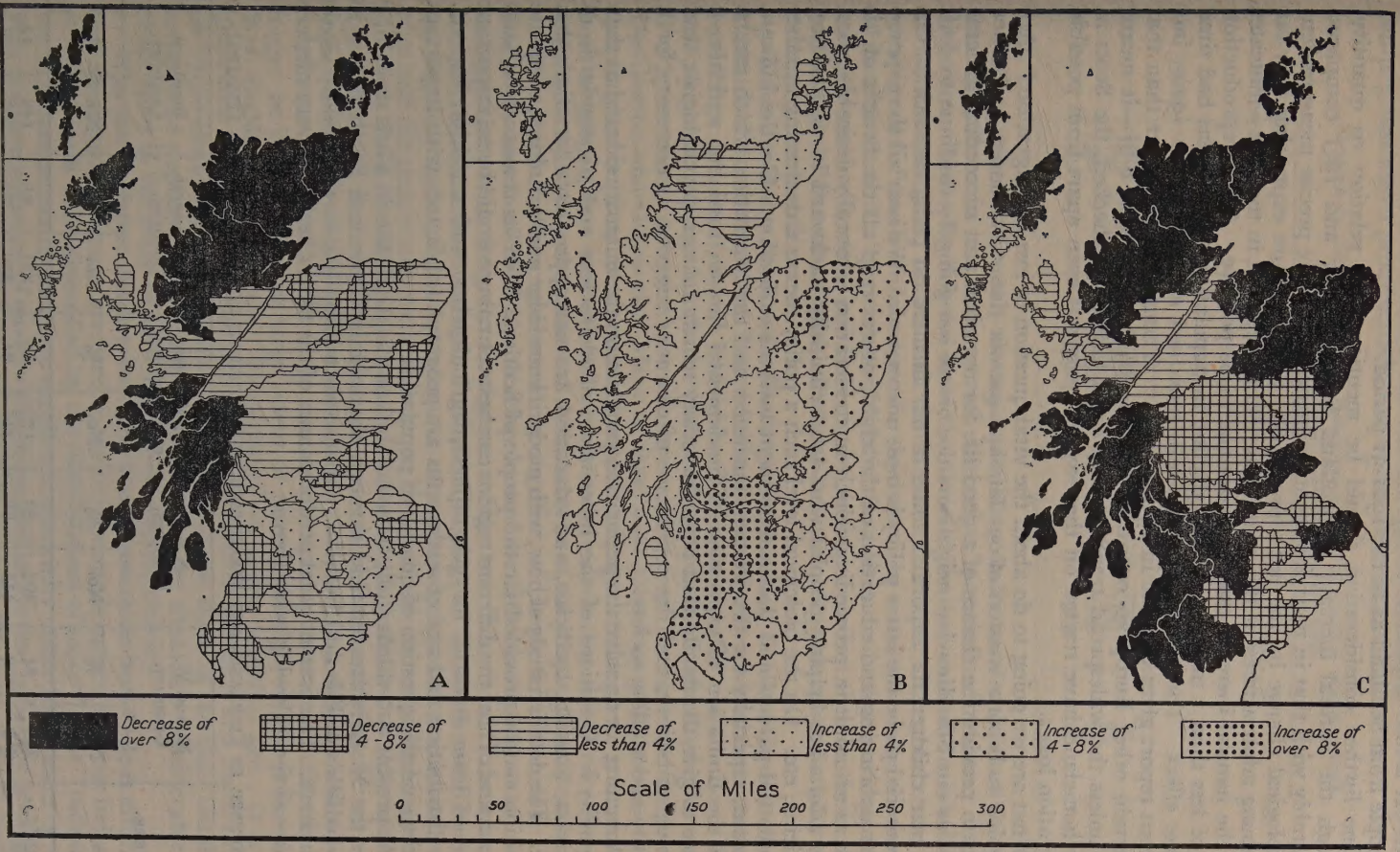

Fig. 1.—Scotland : Changes of population, 1921-1931, as percentage of 1921 population. A. Net increase or decrease. B. Natural increase or decrease, i.e. excess or deficiency of births over deaths. C. Gain or loss by migration.

adults. It is also impossible to say whether the London area continued to suck in people from Scotland as in the 1921-31 period.[3]

One further consideration should be mentioned in relation to quantity. Though the natural increase in Scotland between 1921 and 1931 compared favourably with that in most European countries, the more precise measurement of biological change by the net reproduction rate—a figure expressing how far the young adult women of this generation will be replaced in the next—indicates that the natural increase may not continue to be positive. A net reproduction rate of less than 1 means a natural decline in population when it has had time to take effect. The rate in Scotland still remained above 1 in the 1920s, but a recent report gives the rate in 1938 as 0·96.[4] Though this is higher than that of certain other European countries—e.g. England and Wales, 0·81—it means that unless the widespread trend to very small families is checked, the Scots in their homeland have started on the way to dying out even apart from possible emigration losses.

What are we going to do about the vital question of loss by migration? Are we going to become masters of our fate and use our natural resources and other assets to provide the chance of a good life for ourselves and succeeding generations, as our Scandinavian neighbours do, or are we going to continue to drift and rear children for export as some of our farmers do pedigree stock? On the material plane the latter policy is most uneconomic. We bear all the expense of the upbringing and education of the child, others reap all the benefit of his work as an adult, a proceeding which in moderation is morally desirable when these adults are helping peoples who are technically backward in agriculture, medicine, etc. On the biological level such a policy means a decreasing number of potential parents and thus a movement towards extinction. On the human, it means, especially for the women, loneliness and the frustration which results from the limitation of expression of fundamental human instincts, and also a failure to give the family that place in society which doctors, psychologists, and sociologists believe, and the experience of centuries suggests, is necessary for a healthy and abiding society.

Assuming we do solve the population problem on the quantity side, what then of quality? Questions of the inheritance of characters and of standards of nutrition, housing, medicine, and education are not appropriate for discussion here. The detailed study of how, with modern knowledge and technique, adequate nutrition can be provided for the people of Scotland from its resources on land and sea and of how the different regions can best contribute would be an important piece of team research for geographers, agriculturists, and nutrition experts. The distribution and size of settlements are geographical factors with important bearings on the question of quality of population.

At present two-thirds (fully three million) of the people live in a belt stretching from the N. Ayrshire coalfield through the middle Clyde and Forth Basins to the coalfields of Fife and Lothian. About two million live in the middle Clyde Basin itself. The present great predominance of the Clyde Basin is a very modern feature as the following table shows:

NUMBER IN THOUSANDS AND PERCENTAGE OF POPULATION IN MAJOR REGIONS 1755-1931

YEAR.	N. and W. Counties.		N.E. Counties.		Clyde Basin and Ayrshire.		East Central Counties.		Southern Counties.	
	No.	%	No.	%	No.	%	No.	%	No.	%
1755[5] .	263	21	403	32	179	14	271	21	149	12
1801 .	315	19	445	28	331	21	332	21	185	11
1861 .	399	13	706	23	1060	35	626	20	273	9
1931 .	312	6	830	17	2307	48	1137	24	251	5

In recent decades the drift to the towns, in operation since the late eighteenth century, was also a prominent feature as the following table shows:

NUMBER IN THOUSANDS AND PERCENTAGE OF POPULATION LIVING UNDER URBAN AND RURAL CONDITIONS 1861-1931

YEAR.	URBAN.		RURAL.	
	No.	%	No.	%
1861 . .	1767	58	1296	42
1891 . .	2841	71	1184	29
1921 . .	3772	77	1110	23
1931 . .	3880	80	963	20

In 1931 there were only three people living under rural conditions for every four in 1861. In the same period the urban population increased by over 2,000,000. It can be inferred from the above table that most of the inhabitants of modern Scotland, unlike their forefathers of three or four generations ago, grow up out of touch with nature, the rhythm of the seasons, and the relationship of man to the soil. Their mental conditioning by a man-made environment of concrete and steel, stone and brick, must profoundly affect their outlook on life just as the deficiencies of fresh air, sunshine, and adequate space for play affect their physical health.

There are many small and a few large burghs along the East Coast and in the lowlands of Strathmore, the Tweed Basin, and the Solway, while there are many, both large and small, in the coalfield and industrial belt.[6] In the Forth Basin and Ayrshire the large burghs are fairly well spaced, but in the Clyde Basin there is a great cluster in and above Glasgow and lining the banks as far down as Dumbarton and Greenock. Many of these have joined up with one another to form a giant built-up area or are in imminent danger of doing so. It is our duty, both as geographers and citizens, to ask ourselves whether this is necessary and whether it is in the real interests of the country or of the people directly concerned.

The rapid increase and crowding together of people in the middle Clyde Basin was associated with the development of manufactures using steam power and especially with the great development of the iron industry after the introduction of railways and steamships. In the earlier phase of the Industrial Revolution the necessity to be near the chief source of power—coal—tended to locate industries and the people who worked them on the coalfields or on navigable estuaries close by. Prof. Patrick Geddes called this the " Palaeotechnic " or older technical age. But with the use of electricity to drive machinery and of motor transport man has now the technical means to locate many of his industries where living conditions are healthier for body, mind, and spirit. Moreover, they need no longer be concentrated in large towns or accompanied by smoke-polluted air. Prof. Geddes called this the " Neotechnic " or newer technical age. It is well illustrated in countries whose industrial development is recent and based mainly on hydro-electricity, for example in Sweden, where three of the chief industrial towns have populations of 40,000 to 80,000 and are situated a considerable distance apart in the midst of agricultural and wooded country.

Why not in future develop Scotland along neotechnic lines? It is estimated that about 500,000 houses are needed, and it is generally agreed that our industrial structure needs to be diversified by the establishment of more " light " industries. We can have access to adequate supplies of electricity either from water or coal. Why not then make use of modern technique and locate new industrial settlements in parts of Scotland outside the lower Clyde Basin in the form of small towns of some 5000 to 7000 people with adequate community buildings and services and at suitable intervals larger regional centres of approximately 20,000 to 40,000—

that is in addition to such towns and centres already in existence ? These centres would be small enough for their people to have easy and intimate contact with the land and nature and large enough to enable recreational and cultural facilities, such as hitherto have largely been confined to cities, to be provided on an economic basis for their people and those of the surrounding countryside. Their presence would have a twofold benefit, for it would also help to revive the rural life of the surrounding district and bring its people opportunities of culture and recreation at present inaccessible to most of them. Moreover, it would give the young country people a greater choice of occupation without having to emigrate from their home districts and at the same time give the children of industrial workers a real chance to enter agriculture as a whole or part-time mode of life. The last would help to redress the national ill-balance between agriculture and industry and commerce which has become more and more accentuated within the last half century.

These towns and centres should be fairly evenly distributed throughout those parts of the country not precluded by cramped sites, mountainous topography, natural inaccessibility, or excessive rainfall. An existing tradition of community life would be an asset in building them up. It would, therefore, seem obvious that suitable nuclei exist in some of the many small burghs outside the present congested urban areas, i.e. outside the Clyde area between Wishaw and Greenock, and also at some distance from Edinburgh, Dundee, and Aberdeen, leaving at least a green belt of agricultural land beyond the present limits of their built-up areas. In addition, there are also some places where road or railway nodality or war-time factories or docks might offer suitable locations.

To develop an adequate basis for full living, the life of the countryside, the village, the small and large burghs, and the cities should be properly integrated and each provided with educational, cultural, medical, and other facilities appropriate to the size of its sphere of influence. Major cultural foci already exist for the S.W. in Glasgow, the S.E. in Edinburgh, the N.E. in Aberdeen, and the Angus–E. Perthshire–N. Fife Region in Dundee–St. Andrews. But the last will function properly in this way only when Dundee is joined to N. Fife by a road bridge, while the full development of Edinburgh as a regional focus and national capital awaits the construction of a road bridge over the Forth at Queensferry. Only the W. Highland Region lacks an adequately evolved centre for higher cultural and technical education related to its own characteristic environment, modes of life, and Gaelic heritage.

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[Distribution map of population in Central Lowlands, with burghs shown according to size.]

NATIONAL PARKS AND WILD LIFE

By F. Fraser Darling and Averil Morley
Director and Research Assistant, West Highland Survey

Britain has been slow to take up the idea of national parks. In the past we have frequently shown disregard and apathy to our countryside ; while our national economy forces millions of folk to spend most of their lives in factory or office in the midst of large cities with only rare contact with the world of nature. The present-day interest in national parks is, therefore, a very welcome sign and a positive expression of the desire for natural living and of an awareness of the good things to be found in the country.

It is necessary to realise from the first that our interest in national parks is on account of ourselves, and not for the protection or conservation of wild life in its own right. National parks and nature reserves are not the same thing, and indeed are almost a contradiction in terms, for without doubt the constant presence of numbers of people results, often quite unintentionally, in a dwindling of wild-life populations and a destruction of the habitats wherein they live. For instance, a number of people, possibly accompanied by dogs, walking about an area where birds are breeding will disturb the birds from their nests, and this often means that the nests and their contents are exposed, and an exposed egg or chick is a gift to the keen-sighted hoodie crow.

Plants are especially vulnerable, for the more beautiful and striking get over-picked and torn up. We have largely given up wishing to keep wild birds in cages, but many people still strip the flowering branches of pussy-willow or broom for some momentary pleasure, even if by so doing they destroy the bush. An instance occurred in England not so long ago of a procession of people issuing from a city, armed with trowels and baskets, who uprooted a hillside of primroses that had been opened to them by a benevolent landowner. Camping, trampling, the mere passage of human feet, will destroy without intention the ground herbage. After a party of folk has wended its way admiringly across a glade of bluebells, that glade can look a shambles.

Collectors are another cause of disturbance and disappearance. They are the bane of rare species, possibly doing more harm among birds, which on the whole are fairly conspicuous and easily traced. The crested tit and the crossbill are represented in Scotland by indigenous sub-species, and are few in numbers, breeding in pine forests in a few restricted areas which will almost certainly be scheduled for national parks. They are both persecuted by egg collectors, as also are the rare dotterel and greenshank. The snow-bunting is another victim, but possibly evades the human predator better by its habit of nesting in the highest mountain zone, among boulders and scree, often placing its nest in an inaccessible cranny that can mock the efforts of the avaricious. In a national park the toll on eggs of rare birds at present levied by professional collectors will be increased by amateurs, probably of a fairly youthful age, but as deadly in their effect. These amateurs do not, as so many of the professionals, expect a monetary reward for their robbery, but are unable to resist the acquisitive urge that overtakes so many of us, when young, at the sight of a nestful of smooth, shining eggs ; and again, like so many of us, have not the reasoning power or imagination to see where their act is going to lead. It is indeed one of our saddest and most persistent traits that we can rarely visualise inevitable sequences, and our attitude to the present is like the young lad's who was discovered this summer to be carrying off all the eggs of a tern colony, because " there were plenty of them."

Although the shooting of birds and mammals for eventual deposition as stuffed

mounts in glass cases has largely died out in Britain, the far less destructive pursuit of photographing wild life has much increased. But even the photographer may contribute to the toll on a species. Perhaps the sitting bird is kept too long off her eggs, or the photographer removes so much cover from around the nest that it is exposed to the keen eyes of predators. After the war, photography of wild life will deservedly become much more popular; but we must expect wild life in an area such as a national park, where nature lovers are concentrated, to suffer proportionately greater loss, at any rate in the breeding season.

Boating and canoeing in any great degree will disturb quiet waters, and make accessible to frequent visitors the small islets that dot so many Scottish lochs whereon colonies of sea birds nest, red- and black-throated divers, or the grey heron if the islet be tree-grown. Ducks and waders will not come to a shore where people are bathing and generally enjoying themselves, any more than prehistoric man would take his children down to the river where herds of hippopotamuses played!

Lastly, comes the gravest and greatest danger of all, yet an almost inevitable one, that of fire. So much of the ground herbage of Scotland's wild country is especially inflammable. Dry bracken, white bent, and heather and juniper make perfect kindling. A carelessly made camp fire, a discarded cigarette, a glass beer bottle thrown down in a bed of dry undergrowth there to focus the sun's rays, and away goes a whole hill or more in flames that spread and destroy with extraordinary rapidity. Conifers are particularly susceptible to fire, rarely recovering from the effects of scorch, and conifers form the main bulk of the Forestry Commission's plantations and of our Scottish woodlands, including the almost unique remains in Inverness-shire of the indigenous pine forest. Three thousand acres of this forest of Rothiemurchus have been destroyed by fire in the present owner's lifetime. As a national park, the danger would be far greater than at present. A forest that has been swept by fire is an unforgettable sight. At midsummer it shows only dark and lifeless-looking patches of burnt trees, some of them striped black and orange like attenuated tigers where the dead outer bark has begun to peel off. Beneath one's feet the ground is charred black, and covers the boots with a fine dust, and the stiff leafless remnants of heather stalks catch at the ankles. A few birds haunt this desolation—the robin, strangely enough, and perhaps the tree pipit. In later years, seedling birches colonise the ground, and bracken seizes its chance to profit by the removal of competitors, and thus the whole vegetative complex is altered. Let us note the fate of some of the Surrey heathland in England, and see to it that every youth hostel and rambling club and camping ground on our national parks is a cell of propaganda for the prevention of fire.

These are the main evils that national parks would draw down on the wild life within them. The good is more indirect, but nevertheless real. Many folk will come to these parks with little or no previous love of country or animals, and will find themselves becoming interested in the life they find there. The townsman, at present shut off from so much that is good to know, will have an opportunity to expand and grow in ideas, and though to many "Nature" will be as water on a duck's back, there will be others to hear and see. The more knowledge and interest there is among people about wild life, the more chance will that wild life have of obtaining recognition and care in the national policy. This care is needed not for sentimental reasons only, although, as the British Ecological Society's report on nature reserves states, "no greater mistake can be made than to minimize the importance of sentiment. . . . Sentiment, like other human qualities, can be unduly exalted and misused, but it remains one of the most important and inescapable of human motives and must be given its just place in social organization." The tremendous destruction of our impact upon the natural life of North America, Australia, and New Zealand, and the immediate consequences of soil erosion, seasonal flooding, and the creation of deserts, are recent enough to bring home to all thinking people that the attitude of St. Francis serves a sound biological end, and that "my brother, the tree" and "my sister, the bird" is a necessary con-

cept, whereas greed and neglect eventually make the environment impossible for human life.

In Scotland, we have as good an example as there is in any other part of the world of the results of exploitation and destruction, though perhaps not everyone realises it. The blue-shadowed moorland and mountains of the Highlands, with their network of sparkling lochans and the white crofts clustered by the shore, are romantic to look at, but they represent a desert. The desert need not necessarily be created by waterless conditions. In the Highlands, and especially in the West Highlands, the heavy rainfall and constant wind are climatic perils, the soil's protection against which was the tree and the sward beneath it, which screened the earth from their direct attack, held the soil from being washed down the steep mountainside, and the plant nutrients from being leached out. Trees broke the blast of the wind, and gave back all they took from the earth in the form of humus. During the last three centuries our forebears destroyed this essential cover of the Scottish forests of pine and birch, either for furnace smelting of iron or to clear the ground for sheep. The soil lay open and exposed, made more naked by the habit of periodic, haphazard burning for sheep, and the present-day result of the consequent decline of fertility and absence of a buffer to climate is a reduction in the power of the land to feed the people, the human flight from the deteriorated ground, and the existence of a Highland problem.

It may be said that there is not much use in arousing an interest in wild life if that life—at any rate in the large tracts of country scheduled as national parks—is to suffer reduction in numbers and variety of species. This reduction is inevitable if many folk come on to a piece of ground, yet people on holiday quite naturally do not wish to be dragooned or regimented, confined to certain roads and routes. In America, which has many national parks, the numbers entering them are often controlled, and only a certain quota allowed in at a time ; but this would hardly be balm to the indignant free spirit of a Glaswegian who had bicycled to the far north during his short holiday from work, only to be informed that the quota was filled and he must go elsewhere.

To meet the position, we should have two kinds of " protected " areas—i.e. those already planned for the unrestricted use of the people, and those as yet without many champions among the electorate—areas where entry will be controlled and, if necessary, forbidden, except for *bona-fide* scientific purposes, and in some cases education. In part this would be easy to accomplish because the breeding grounds and haunts of some of the animals which we would be most anxious to conserve are often in isolated and out-of-the-way places—indeed, this is probably the chief reason they have survived to the present day. It would be no hardship to the ordinary person, for instance, to be denied unsupervised entry to North Rona during the breeding season of the grey seal. In some parts of Britain such sanctuaries are already in being, such as the Farne Islands, but Scotland is pre-eminently the place for such reserves, for in Scotland it is still possible to find some of the native mammalian fauna that achieves a size larger than that of house mouse or rabbit, which is all that is left in so much of England. Badger, wild cat, otter, fox and pole cat, the red deer and the roe deer, the magnificent grey seal, and of birds, the grey lag goose and the golden eagle, in their rightful setting of woodland and mountain and moor, loch and island, are things of beauty we cannot afford to lose from our increasingly urban civilisation.

It is probable that small sanctuaries will be established within national parks created primarily for the recreation of the people, but we still need nature reserves for particular habitats and particular animals and plants. These reserves would not be merely sanctuaries for *all* wild life within them because such total preservation in a relatively small area would result in too much of a swing of the pendulum in the character of the populations of wild life within the reserves. For example, the unrestricted preservation of hoodie crows would soon clear the countryside of many desirable and useful species of birds, and foxes can be a very considerable check on red and roe deer and on the larger ground-nesting birds. The academic preserver of wild life may say that it all evens out in the end and that we should

not interfere, but the fact remains that our lifetime is short, and we wish to shorten the stroke of the pendulum so that we do not find ourselves living wholly in a period of increase of hoodie crows ! Furthermore, we live in a countryside where most of the ground is farmed in one way or another, and we cannot expect rural society to stand for the unrestricted increase of foxes, crows, deer, and rabbits. Overstocking also means starvation and destruction of the habitat. Again, if a reserve happens to be very small, or an island, the uncontrolled increase of one species may clear the place of the species we are out to protect. Small land birds on islands are generally few, and our experience is that if the population is wiped out through some mischance, re-colonisation is nothing like so certain as it would be in a mainland area. We found a sparrowhawk to be a real menace to our efforts to increase the numbers and variety of small birds on the island of Tanera. Briefly, we need to use Theodore Roosevelt's word *conservation* rather than preservation, and his phrase " conservation through wise use," which implies management.

The techniques of wild-life management are subtle and yet strictly scientific. Few people in this country are qualified as yet to hold the posts of wardens, for the curricula of the zoological departments of the universities are inclined to neglect field studies and the science of ecology which deals with the fluctuations of natural populations and their causes and effects.

Protection of our fauna and flora, then, is more than the ratification of a parliamentary bill or international resolution. It depends on the growth of public feeling, the adequate power to protect beyond the mere written word, the careful study of conflicting interests, and the knowledge of what to do within the nature reserve when it is established.

DEBATABLE LAND IN SCOTLAND

By Professor A. G. Ogilvie, O.B.E., F.R.S.E.

This note concerns the possible future use of a certain type of land in Scotland, the distribution of which is partly shown in Fig. 1. The purpose is, first, to draw attention to this land as a generally uniform type as well as to its extent and distribution; and, secondly, to suggest, as the title indicates, that its future should be debated. But the use of this title is not by any means intended to imply that this is the only type which merits it. The question, broadly, is this. Should it in the future be devoted to arable farming or to pasture or to forest ?

The land in question comprises all the substantial parts of Scotland that are between 400 and 1100 feet above sea-level and also have very gentle slopes. These limits of altitude have an important bearing upon farming ; most of the good arable country lies below 400 feet, but ploughed land is found as high as 1100 feet, the upper limits generally being higher in the drier east than in the wetter west. Such variation in altitude, then, apart from local economic conditions, reflects generally the influence of climate, while in detail, of course, exposure plays its part. But every farmer is closely concerned with the drainage of his fields, and the stock-keeper with that of his rough pasture ; the forester, too, cannot neglect this matter. Now the cost of artificially-aided drainage is obviously related closely to gradient. Hence the importance of viewing these two natural elements, height and slope, together.

The map was constructed from the " One-Inch Popular " edition, on which contours are drawn at intervals of 50 feet. On this were marked all areas within the chosen limits of height and where the average gradient, in whatever direction, was estimated to be less than 1 in 40. These areas were then re-plotted, slightly generalised, on the smaller scale of four-miles-to-one-inch, and on or beside each patch figures were entered showing its altitude either as approximate upper and

SOUTH-CENTRAL SCOTLAND
TO SHOW THE HIGHER GROUND IN THE LOWLANDS, BETWEEN 400 & 1100 FEET, WHICH HAS A VERY GENTLE SLOPE, OF THE ORDER OF 1 IN 40 OR LESS.
COMPILED ON SCALE OF 1 INCH TO 1 MILE AND REDUCED.
APPROXIMATE HEIGHTS OF EACH AREA ARE SHOWN IN FEET.
A.C. Ogilvie, Dec., 1943.
FIRTH OF FORTH
Loch Lomond
Loch Leven
River Clyde
River Tweed
Scale of Miles
0 5 10

Fig. 1.—South-Central Scotland : Higher ground, between 400 and 1100 feet, which has a slope of 1 in 40 or less.

lower limits or as an approximate mean height. On this map all areas of less than one square mile were omitted.

It will be seen, then, that while the map fulfils its purpose of presenting the problem as a whole, no attempt is made to display local variations of environment ; and these are, in fact, quite considerable. In the first place, the need of artificial drainage is likely to be greater where rainfall is higher or where the flow of streams is impeded for any reason. Secondly, the nature of the subsoil is of obvious importance. Throughout the greater part of the tracts this consists of glacial or fluvio-glacial deposits ; but these vary from tenacious boulder-clay to light sands and gravels, and so exhibit a great range of permeability to water. Beneath such deposits, again, the character of the rock varies widely ; but except where limestone occurs, the permeability of the strata is not likely to be great. Actually the subsoil over much of the larger tracts is peat, and the presence of this points to ineffective natural drainage at the time of its formation. The presence or absence of peat will no doubt influence greatly the decision to be taken as to the future use of this land.

Distribution of the Debatable Land

The outstanding feature of all the tracts is their relative flatness ; and this is quite certainly the result of prolonged denudation during a late geological period, while the minor features of relief are largely due, no doubt, to the glaciation that followed. We have to deal, then, with surfaces of erosion so smooth that they may safely be termed peneplanes. They form part of the surface provisionally designated the " Higher Lowland Peneplane " of Scotland.[1] But over large parts of its former extent, this surface is now represented chiefly by many hill-tops of about the same height and separated by valleys where rivers have gnawed most of it away. On the present map few of these hill-tops are shown, because such small patches are of no practical importance. On the other hand, the substantial remnants of the smooth upland which present problems in land utilisation also provide the record for a chapter in the geological history of Scotland that has yet to be written. And it will be important for this to decide whether there is really but one surface—or, as seems likely, two or more surfaces, with breaks of slope separating them. But we need not now be further concerned with all this ; neither need we discuss the possible reasons for the virtual disappearance of the peneplane(s) from many parts of the country. For the present purpose it is the extent and distribution that matters.

Fig. 1, of course, represents a further reduction from the original map ; moreover, to save space, it omits a large part of Scotland, but the areas omitted contain little of the debatable land. North of the Firth of Tay, there are patches of it on the Sidlaw Hills and many more along the Highland Line, but all of these are small. Again, it proved a surprise to find that from the River Dee to East Sutherland there is very little gently sloping ground above 400 feet. On the other hand, in Caithness, it is common knowledge that ill-drained land predominates. Wide tracts with small slope occur there at many altitudes, down nearly to sea-level. Caithness therefore has a problem of its own, not here considered.

The Southern Uplands resemble the North-East in the small extent of the surfaces now examined, and, in the part omitted from Fig. 1, the only important area of these plateaux lies in Wigtownshire, where it includes much ground at the extreme end of the Uplands.

Turning now to the illustration : it is clear, first, that this debatable land is a feature of the " Mid-Lowland " ; secondly, that it is most unequally distributed, most of it lying south of the Forth ; and, thirdly, that in the west it is less extensive than might have been expected. The occurrence in West Fife is interesting because it is arranged in terraces as in a stair, while in Berwickshire there are two adjoining areas at different heights.

It will be recalled that mining operations have long been active in many parts of this region ; and it is indeed unfortunate that disturbance of the surface drainage, due to subsidence, should thus have added another element of difficulty

in the economic use of the soil just where the average natural gradient is so small. It is perhaps a good thing that some of this upland in the heart of Scotland must in any case remain reserved for the supply of water to the towns and so perhaps devoted to the planting of trees.

It is clear, then, that we may conclude this survey by noting that the debatable territory offers its challenge chiefly to those responsible for planning the future use of land in the south-central region of Scotland.

[1] *Great Britain, Essays in Regional Geography.* Edited by A. G. Ogilvie, 1928. See *Central Scotland,* by the Editor, p. 412 and map.

NATURE CONSERVATION IN SCOTLAND AND FURTH OF SCOTLAND

By Robert M. Adam and John H. Kenneth

(*With 12 Plates*)

Many obvious changes wrought by man in his surroundings, topographical and distributional changes for example, can be symbolised in maps. Less amenable to facile representation are the modification or destruction of a natural habitat or of man's fellow-organisms the animals and plants, and their indirect effects. The very word improvement would seem to imply the replacement of natural surroundings by artificialities. Of necessity, the creation of an artificial habitat reacts upon man. Life associated with the growth of cities and industrial areas has engendered in a considerable section of the community a mental as well as a physical dissociation from nature, in extreme cases even an incapacity for harmonious living in natural surroundings. Nature too commonly is considered as something to be exploited, as a mere adjunct to man, instead of being experienced and known as an environment to be lived with as well as lived in.

Sooner or later, the reaction sets in. Man becomes aware of the need of healthful and unmarred surroundings, of a sanctuary whither he may escape, even temporarily, from the thraldom imposed by his own demolitions and constructions. No individual and no nation can without hurt ravage or destroy fundamental and vital conditions for the development of well-being, ways of escape from the narrowing and warping influence of a shut-in existence. Such vital conditions are provided by contact and communion with nature, and nature's sanctuaries (sanctuary meaning a holy or perfect place) have throughout the ages attracted man in quest of bodily, mental, and spiritual harmony. The extension and growing complexity of artificial surroundings accentuate the self-evident and urgent need for conserving unspoilt scenery.

A sense of duty combined with a sense of beauty has ever impelled some individuals to safeguard treasures of scenic beauty and wild life. But it is only in recent times, perhaps from the beginning of the nineteenth century, that nations have sought to reserve and conserve areas of interest or beauty for the benefit of the people, and to set apart wild life sanctuaries. The first national park in the United States of America, Hot Springs Reservation, dates from 1832. About a hundred years later a National Parks Committee in Great Britain declared that landscapes unmarred by man—mountains, moors, native woodland, downs, fens, river banks, coastline—" constitute an important national asset, and the nation cannot afford to take any risk that they will be destroyed or subjected to disorderly development."

Such assets are being conserved in many parts of the world. By 1910, a total area of nearly 10,000 square miles had been set apart by the United States government as National Parks and National Monuments,[1] not including national forests and national game preserves, and areas conserved under authority of individual States. Since then, the number and extent of conserved areas have

been considerably increased, and their recreational and educational value has been enhanced by the creation of a National Park Service in 1916 and by the supplementary functions of the National Monuments, veritable out-of-doors museums and comprising sites of geological, botanical, and historical interest. These National Parks and Monuments are too numerous to be listed here, and the larger ones, Yellowstone, Glacier, Grand Canyon, Yosemite, Mount Olympus, for example, are well known. The reservation and game preserve established in Alaska in 1917, Mount McKinley National Park, extends to 2645 square miles. Each unit of the United States national park system represents typical regional features.

The National Parks of Canada,[2] twenty in number, with a total area of 12,525 square miles, have been established during the past sixty years. They range from the well-known playgrounds of the Rocky and Selkirk Mountains, to the big game sanctuaries of Alberta and Manitoba, and to the St. Lawrence islands and Cape Breton highlands, from the forested lakeland of north-western Canada near Prince Albert to Point Pelee, Ontario with its beaches and remarkable flora and bird life. In addition to these national parks there are the provincial parks, such as the Laurentides Park in Quebec, and the 20,000 square miles containing Algonquin and Temagami Parks in Ontario.

Apart from their scenic attractions, the national parks of the Union of South Africa,[2] particularly the Kruger National Park in the eastern Transvaal, are mainly notable for their fauna. The Addo Elephant, Kalahari Gemsbuck, Bredasdorp Bontebok, and Mountain Zebra National Parks, all situated in the Cape Province, were created in 1931 and 1937, and are under the control of the National Parks Board. Many more reserves are controlled by the provincial administrations.

Nor have other members of the British Commonwealth of Nations been remiss. A portion of the Darling Range in Western Australia [2] has been reserved as a sanctuary as well as a playground. Owing to a wise government policy, many lovely areas of forest, jungle, mountain, and lakeland have been saved from spoliation or destruction in Queensland. For instance, the whole of Hinchinbrook Island, 96,000 acres, with its high serrated peaks and countless features of beauty and interest, forms one of the National Parks. Tablelands and deep, verdant glens have been reserved in a coastal area of the Illawarra district of New South Wales. The 100,000 acres reserved on Wilson's Promontory, Victoria, not only constitute a sanctuary for indigenous plants and for koalas, wallabies, emus, and other species of the Australian fauna, but offer many scenic attractions. Much of the natural beauty of Tasmania, both animate and inanimate, has disappeared or been changed owing to human agency, or been occluded by private ownership. By the co-operation of public-spirited citizens, however, a reserve of more than 40,000 acres in the Mount Field Range is now administered by the National Park Board. While sight-seeing and nature study remain the primary attractions, winter sports in the highlands are attended by an even greater number of visitors. A part of the Central Mountain area of Tasmania is also reserved for hikers and climbers.

The value and national importance of reserving for all time large areas of virgin country has nowhere been more fully appreciated than in New Zealand.[2] The Tongariro National Park in the North Island, with its mighty volcanic cones, covers an area of 150,000 acres. Mount Egmont, too, with its beautiful forest belt, has been reserved. In the South Island, there are the areas of Arthur Pass National Park (120,000 acres) and Tasman Park (97,800 acres), which includes Mount Cook (12,349 ft.) and the Tasman Glacier. The grandest of the national parks, Fiordland National Park, extending to 2,266,000 acres, comprises the southern fiords and sub-tropical forest in the south-west of the Dominion. There are also many other beautiful scenic reserves, such as Stewart Island, by about 130 square miles larger than Skye, Lake Waikaremoana, and the Waipoua Kauri Forest.

In all the countries mentioned, it has been found desirable and practicable

to safeguard considerable territory, but the demand is not yet fully satisfied. In Europe the course of human activities has tended to reduce the number and extent of places which a more enlightened awareness of the fitness of things would have conserved. In some measure, however, citizens of various European countries have succeeded in preventing the destruction of landscapes and of the indigenous plant and animal life. In Switzerland, for example, the threatened destruction of vestiges of primitive nature by hydro-electric and other industrial schemes led to the formation of a national society for the protection of nature and to the establishment, in 1909, of the first Swiss National Park,[3] south of the Engadine. Other European nations have also taken action in recent years; in Italy, Poland, Czechoslovakia, Sweden, for instance, and even in Germany notable landscapes and plant associations have been preserved from destruction by quarries or other commercial enterprises. Norway, on taking over the sovereignty of Svalbard, immediately took steps, in Spitsbergen and other islands of the archipelago, for protecting wild mammals and birds from extinction, and made proposals for the prohibition of collecting many rare plant species. The few historical relics were also to be protected.[4]

In Great Britain, a number of individuals and organisations have helped to preserve fragments of the remaining natural heritage. In 1929 a National Parks Committee was appointed, which, in its Report issued two years later, recommended a scheme of national reserves and nature sanctuaries, with due consideration of the different aspects of national park policy in England, Wales, and Scotland. The recommendations were not immediately carried into effect, but many societies continued to study the problems involved and to press for action. The functions fulfilled by the National Trust in this connection have, of course, proved invaluable, as witness the preservation of scenic beauty in Lakeland and elsewhere. The Society for the Promotion of Nature Reserves initiated a Conference on Nature Preservation which in 1942 appointed the Nature Reserves Investigation Committee. In the following year this Committee issued a significant Report on Nature Conservation in Great Britain.[5] One important decision was the recommendation to separate National Reserves, which should be acquired by the State, from Local Reserves, many of which already exist and which would be conserved by various organisations or persons and be conserved locally. Another recommendation referred to the formation of local committees for obtaining information as to areas it is desired to conserve.

A committee, with very similar terms of reference, was appointed by the British Ecological Society, and in a Report (1943) [5] expressed agreement with most of the considerations of the Nature Reserves Investigation Committee's report, excepting a suggested division of Reserves into habitat, species, amenity, and educational reserves. It was felt that such a division should not be sharply defined, as in the majority of the reserves at least some of the functions can be, and should be, carried on side by side. The establishment of a National Wild Life Service was recommended, for carrying on continuous research and for the administration of national nature reserves, the governing body to be given an independent position under the Privy Council.

In Scotland, although no tract has escaped contact with man and his ways to a greater or lesser extent, there are considerable and diversified areas instinct with pristine beauty and in which remnants of the plant and animal populations of former days still survive. Much amenity has been marred, and many opportunities for blending human and natural surroundings have been neglected. Fortunately, however, there is an increasing awareness of Scotland's irreplaceable assets.

Owing to the foresight of the Forestry Commission and co-operation by the Corporation of Glasgow, some 86 square miles of mountain and moorland beauty have been conserved to the west of Loch Long, the Argyll National Forest Park,[6] formed in 1936. In the following year, the National Trust for Scotland came into possession of the Dalness estate, which, together with previously acquired property in Glencoe, forms a triangular area some 22 square miles in extent and

constitutes a national park [7] of special appeal to the hill-walker and mountaineer. The Falls of Glomach in Wester Ross, the highest waterfall in Great Britain, have been reserved since. The most recent addition to our national parks is the part of the historic estate of Kintail acquired in 1944 by the National Trust for Scotland.[8] This tract extends to about 22 square miles, from Glen Shiel and Loch Duich to the Falls of Glomach and the head of Glen Affric. It includes A'Bheinn Fhada (Ben Attow) and the Five Sisters of Kintail, of which the dominant summit is better known to mountaineers as Sgùrr Fhuaran (Scour Ouran). As in other national parks, no "improvements" are to be made other than the provision of camp sites and other suitable accommodation near the main road. Embracing as it does some of the most delectable and sublime scenery in Scotland, this new addition to the natural treasure of the people is most welcome. In its form and composition, its combination of sea and mountains, in its abiding wealth of beauty and inspiring character, this tract represents the embodiment and symbol of the essential qualities of a national park; it provides a tangible expression of the idea which animates the national parks movement. Kintail is the latest, but by no means the last, a unique, but not the only gem of scenery to be conserved for our nation.

In 1942 a Conference on National Parks in Scotland, convened by the Association for the Preservation of Rural Scotland, was attended by representatives of some thirty interested societies, as well as of three Government Departments, of Local Authorities, and the Carnegie United Kingdom Trust. An influential Scottish Council for National Parks [9] was formed with the main object of furthering "the establishment and to watch over the development and control of National Parks, with special reference to Scottish conditions and requirements." In 1943 an advisory committee was set up to deal with a survey of sites suitable for National Parks. The Forestry Commissioners are, of course, concerned with the problem of fitting other Forest Parks into the general National Parks scheme.

At the 1942 Conference, one of the members pointed out that the park system in New York State extends to 295 square miles per one million inhabitants, National Parks in the United States to 219 square miles, in Canada to 1100 square miles, and in New Zealand to 3000 square miles, per million inhabitants. As Scotland has an area of approximately 30,000 square miles and has approximately 5,000,000 inhabitants, and in view of agricultural and industrial needs a national park system on the New Zealand scale would be altogether impracticable, the Scottish Council for National Parks suggest that some 2000 square miles distributed over different parts should in time be reserved. This estimate may, however, be considered rather modest, especially as in a number of the national parks a rural economy could be and would have to be maintained. Moreover, in addition to national parks accessible to the general public, it is necessary to conserve a number of tracts strictly as sanctuaries for plants and animals, and accessible only to a limited number of authorised persons, not to mention the areas required for afforestation and the arrest of denudation. "Jock, when ye hae naething else to do, ye may be aye sticking in a tree. It will be growing, Jock, when ye're sleeping." But national parks will not grow if the nation is asleep, and it may be advantageous to avoid setting an artificially stringent limit to the total acreage to be conserved in the national interest.

Tracts of natural beauty abound throughout Scotland, on the Border and in the Southern Uplands as well as in the Highlands and Islands. The acquisition of such tracts of land, both large and small, by and for the nation is an urgent obligation—urgent because of previous apathy and immediate dangers of encroachment. It would serve no useful purpose here to indicate specific areas it may be desirable to conserve, and such indications will no doubt be provided at the appropriate time by the Scottish Council for National Parks. However, it is possible here to stress the fact that Scotland has been endowed with a natural heritage of beauty and grandeur not less important than the relics of human activity which it is in the national interest to conserve. The glory of Scotland's natural heritage is superior to the limner's art, and photographs are but im-

LOCH AFFRIC
AND
MAM SODHAIL

GLEN DEE
WITH
CAIRN TOUL
AND
BRAERIACH

LOCH A'AN
AND
BEN MACDHUI

NLOCH HOURN

DHAR BHEINN
(LARVEN)
AND
LOCH HOURN

GLEN GARRY

READALBANE
FROM
BEN LAWERS

LEN TORRIDON
LIATHACH
AND
BEINN EIGHE

OCH LOMOND
SLOPES OF
BEN VORLICH

LOCH MAREE
AND
AIRIDH CHARR

GLEN FALLOCH
AND
BEINN OSS

VIEW FROM TANTALLON CASTLE
PART OF THE GANNETRY

THE BASS ROCK

perfect symbols of what they portray. As symbols, however, they serve to focus attention on reality, and the photographs [10] illustrating this article provide some such symbols or indications of the type of scenery to be conserved either as national parks or as wild life sanctuaries, or for both purposes.

Geographical, legal, and financial considerations involved in framing a sound national policy for conserving what is worth conserving in Scotland are not more important than the more fundamental consideration of education. Making the people accessible to beauty is as necessary as making beauty accessible to the people. More attention could profitably be devoted in schools to the natural history as well as the human history of Scotland, to the landforms and rocks, and to the plants and animals. More attention, too, could be paid to the inculcation of kindness arising from a sense of kinship with nature, to the development of an appreciation of beauty as well as of truth. National parks themselves have an educational value, and one might conceive an educational system in Scotland in which a number of subjects, including geography and natural history, would be taught seasonably at first hand in camp schools instead of at second hand from books in town. The need for balanced education is not confined to the young. Adults who would feel indignation at the defacement or destruction of a famous work of art may connive at the defacement of Scotland.

The word park to many means merely a place where there are flower-beds and paths or an opportunity for kicking a ball around. Recreation in a national park would include activities as well as rest not usually obtainable in municipal parks, as climbing, bathing, boating, winter sports, nature study, sketching, and so forth. In a national park, provision has to be made for camping facilities, but any buildings would be designed to harmonise with the landscape. With the experience gained in so many countries as a guide, there is every reason for assuming that national parks in Scotland could be and will be second to none.

But national parks are not the only aspect of conservation. Afforestation is more than ever necessary not only for the production of timber but for the prevention of denudation. The conservation of woodlands on the largest practicable scale is an essential obligation. Many wild life sanctuaries, too, are required for the protection of our native flora and fauna and for purposes of study. Also, many of our historic edifices of national importance have settings of exquisite natural beauty, some being cared for by the National Trust for Scotland. It may be relevant to suggest co-ordination of all activities concerned with the acquisition and conservation of places of beauty and interest in Scotland, to be held in trust by and for the Scottish nation in perpetuity. The co-operation of diverse interests in the formation of the Scottish Council for National Parks augurs well for co-ordination on a larger scale.

Within the thirty thousand or so square miles of ours there is much to be conserved, and not merely here and there a mecca for tourists. There is many a glen, or small island, or part of the coast-line to be cherished locally, to be cherished as much as publicised scenic beauty. Nor is present lack of accessibility a valid excuse for desecration of scenery. Some parts of Scotland, of which even the location is only vaguely known to the majority of the population, are not less beautiful or less worth conserving than more accessible and much visited places. It may again be stressed that a national parks policy necessitates a readjustment of national education. The establishment, maintenance, and value of national parks and other places to be conserved depends very largely upon the development of our awareness of our natural and cultural heritage. So does the future of the nation. This awareness should permeate planning schemes, whether regional, national, or private.

Conservation of amenity in many parts of Scotland and its restoration in others involves an appreciation of relative values. It is evident that other nations have recognised the value of conserving appropriate tracts of their countries. Our own natural and cultural heritage is not less valuable. Conservation of this heritage is not only a national but a human obligation. Staffa and Iona and Loch Lomond are not merely Scottish, but form part of the common heritage

of the entire civilised world. Other places in Scotland are not less beautiful and not less significant. Such places will be shown on future maps of Scotland as national parks and forests and wild life sanctuaries.

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SCOTTISH RIGHTS OF WAY

By Rev. A. E. Robertson, B.D.
Chairman, Scottish Rights of Way Society

The subject of rights of way in Scotland is one which is of much interest to all explorers of the Scottish countryside. A thing to remember at the outset is that the legal aspect of rights of way in Scotland is quite different from that of England. It is the Scottish aspect with which this article deals. Simple trespass in Scotland, i.e. walking about on somebody's land without a gun or a rod, is not a criminal offence : you cannot be prosecuted for it. The sign TRESPASSERS WILL BE PROSECUTED is an empty threat. What the owner of the ground can do is to proceed against you by way of interdict in the civil courts ; and to this end you must be willing, if challenged, to give your name and address. He cannot lay violent hands on you. If he does and you have a witness to support you, he lays himself open to a charge of assault.

A right of way must lead from one public place to another public place. This usually means from one main road to another main road, but a " public place " may mean a harbour, a churchyard, a market stance. This is why a " Coffin Road," a route by which a coffin was carried to a place of burial, is always a right of way. Old burial cairns where the coffin was rested by the side of any track are a valuable proof that a right of passage exists.

Although a right of way implies a through route from one public place to another, the public are entitled to use it in part and to return the way they came. This is to the pedestrian a most valuable privilege. He can take a walk along a right of way and return when he pleases. A right of way has to be used unless it is to lapse (disuse for forty years constituting a lapse), and it is up to the walking public, hikers and hill walkers, to traverse these roads and not be daunted by some gamekeeper who, under orders from his employer, tries to frighten you into turning back. And don't be put off by the misleading sign PRIVATE ROAD. It may be that the owner of the land has constructed at his own expense a motor road for his own use along the line of part of an old drove road. But while this road may be " private " as far as motors are concerned, it does not debar the walking public from going over it. If the route was a right of way before the " private " motor road was made over it, walkers have still the right to use it.

Now as to some general hints. On the well-known and proved rights of way you are not likely to have any trouble, it is on the doubtful routes that questions may arise. You think you are on a right of way, your challenger thinks you are not, and his opinion may be as good as yours. Explain to him tactfully why you

think you have a right to be where you are and give him your name and address. The owner of the ground can, if he likes, ask the court to interdict you ; but this is expensive and uncertain, and it is not likely he will do so unless you are a local resident and likely to make a practice of using the route in question. Remember that it is not fair, especially in the shooting season, to use a right of way to wander about all over the surrounding ground. If you stick to the track you will not materially disturb the game. In spring or early summer it is a different story, and at that time keepers, if spoken to tactfully, are quite complacent. Always be careful with gates, bury all litter, and above all remember the danger of fire.

On ground under sheep in the lambing season a strange dog may do a lot of harm. If you have a dog, keep it to heel when sheep are about. This is only fair and right. I remember once when walking on the Lammermuirs I came upon a picnic party having their lunch ; a dog which was with them was careering about, barking and disturbing some sheep on the hill-side near by. I remonstrated about letting the dog be so out of control. " Oh, it's all right," was the reply, " the dog won't do any harm, he'll never bite them, he's only chasing them." I just wished the shepherd on that ground had been standing beside me and I had heard his explosive and illuminating reply !

The Scottish Rights of Way Society, which was founded one hundred years ago, has been the means of keeping open many rights of way up and down the country. This Society has a long and interesting history and a record of much valuable work done on behalf of the walking public. On November 18th, 1844, a public meeting was held in the Edinburgh Town Council Chambers, the Lord Provost in the Chair, to consider the expediency of forming an association for the protection of the public rights of roadway in Scotland. This proposal was unanimously adopted and a committee appointed to make arrangements, and in April 1845 the Association was definitely formed. A number of influential people were among its first members, as, for example, the Rt. Hon. Sir George Harrison, LL.D. (the grandfather of Mr. Alex. Harrison, C.A., the Treasurer of the Royal Scottish Geographical Society), Mr. John Bartholomew (the grandfather of the Secretary, R.S.G.S.), John Hill Burton, and Adam W. Black. One of the Association's first achievements was to secure access to Hawthornden and to establish the right of way through Glen Tilt which was contested by the then Duke of Atholl. The Pentland area also was given special attention, with the result that many paths in and through the Pentland Hills are now open to the public which would otherwise have been closed.

In 1884, the Association was incorporated under the Companies Acts of 1862 to 1883, and a new name given to it, its present name, The Scottish Rights of Way and Recreation Society. This was done for the legal protection of its members. One became a member by acquiring one or more £1 shares, and in the event of the Society becoming involved in a dispute leading to legal proceedings, the liability of members was limited to the value of their shares. The result of this is that, even to-day, membership does not involve an annual subscription : you buy a share or shares, and that's the end of it, which means a considerable financial loss, as the legal dangers are now eliminated, for it is the local authorities that are now responsible for legal action. It is probable that a change in the constitution will be made whereby members will be asked to pay an annual subscription.

After 1884, the Rights of Way Society was the means of preserving several important cross-country routes. The Glen Doll case was fought and won in the Courts and way-leaves secured in the Rothiemurchus area. In recent years the Society has been doing a great deal of quiet but valuable work. A writer in the January (1944) number of this *Magazine*, mistakenly, referred to the Scottish Rights of Way Society as *once* an active body, inferring it is no longer so.

Let me state some of the things we have done in the last twelve years. We have been the means of claiming and establishing a right of passage from Achnashellach to Kinlochewe and Torridon by Loch Coulin ; from Kinlochewe north to Loch Broom by the head of Strath na Sheallag ; to Poolewe by the north side

of Loch Maree ; from Ullapool to Achiltibuie by the north shore of Loch Broom ; from Glen Affric to Loch Duich ; from Glen Cannich to Killilan ; from Spean Bridge to the head of Loch Treig by the " Larig " ; from Rannoch to Bridge of Orchy by Invercomrie and Gorton ; from Tomintoul to Inchrory ; from Loch Avich to Loch Feochan in Argyll ; from Iveroran over the Blackmount by the old road to Kingshouse, besides others. In 1932, the Society built a foot-bridge over a dangerous stream on the northern side of the Corrieyairack Pass, and about the same time it repaired the Bedford Memorial Bridge at the Falls of Tarf in Glen Tilt.

We have erected a great number of notice-boards, and would have erected more had the necessary permission been forthcoming. For while you may have a right of passage along a route, you have no right to dig a hole beside it and erect a notice-board without the permission of the owner of the ground, a permission that many owners are unwilling to give. The local authority can do it, but very often they are influenced by the proprietor or his factor just to do nothing.

In this connection may I say that the users of unfrequented rights of way can do a great deal to help those who come after them by erecting small cairns in strategic points where the path is faint or a deviation exists. Don't be satisfied with a single cairn : that indicates a route, but it tells you nothing as to the direction of the route. But a cairn with a smaller leading cairn before and after showing the direction may be a perfect godsend to a benighted or bewildered wayfarer.

In conclusion, may I ask the readers of this article to do something to help the Rights of Way Society. Write to the Secretary, Mr. George D. Cheyne, LL.B., S.S.C., 32 Rutland Square, Edinburgh. When the war is over money will be needed to spend in re-erecting boards and posts which have been taken down and removed lest they should have given information to the enemy, and this is a job that will involve some expense. The Rights of Way Society is quite active and alert, albeit much of its work and influence is behind the scenes. We do more by quiet negotiation than by open warfare.

It is the spread of information that we in the Rights of Way Society stand for, and it is the concealment of information, a conspiracy of silence, that many factors and landowners and shooting tenants stand for. In this connection we have a series of O.S. maps in our office on which are marked those cross-country routes which we consider to be rights of way. Those marked routes are by no means complete, and our making does not, of course, make them rights of way. But the information is valuable, and the maps may be consulted by anyone interested, and we will welcome any further addition to our list. For ignorance is what some of the Highland proprietors and many of the factors count on. The public have the right to use these old paths and drove roads and " coffin " roads, no man making them afraid.

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NOTES AND REFERENCES

EUROPE

SCOTTISH WHALING FAMILIES. In *The Polar Record* (1944, 4 (*27*) : 119-122) Dr. J. M. Wordie pays tribute to two of the many notable members of Scottish whaling families, Captain William Adams (1869-1942), the authority for North-East Baffin Island, and Dr. Robert W. Gray (1865-1943), authority for the Greenland Sea and whale. This appreciation of their life-work is accompanied by a photograph, taken on board the *Eclipse* in 1888, of Dr. Gray and his father, Captain David Gray of Peterhead, and by a portrait of Captain Adams.

LAKELAND MORAINES. Several interesting examples of the effects of glaciation in Lakeland have been noted by T. Hay (*Geographical Journal*, 1944, 103 (*3*) : 119-124. 2 pl. 1 sketch-map) during a visit to Rosthwaite. Two nearly complete terminal moraines, marking the ends of the Seathwaite and Stonethwaite glaciers, are described, also some high-level erratics discovered by the author. Examples of combes, with special reference to Greenup Combe, and of the occurrence of boulder clay above deltaic deposits are also discussed.

AGRICULTURE AND PLANNING. By L. Dudley Stamp. *The Journal of the Town Planning Institute*, 1944, 30 (*4*) : 131-141. Discussion : pp. 141-146.

CENTRES OF POPULATION OF ENGLAND AND WALES AND SOME OTHER CENTRAL POINTS. By Sir Charles Arden-Close. *Geography*, 1944, 29 (*2*) : 38-40. Diagram.

THE URBAN HIERARCHY IN ENGLAND AND WALES. By A. E. Smailes. *Geography*, 1944, 29 (*2*) : 41-51. Map.

THE DISTRIBUTION OF EARLY FULLING MILLS IN ENGLAND AND WALES. By R. A. Pelham. *Geography*, 1944, 29 (*2*) : 52-56. Map.

DISPERSION AND AGGLOMERATION OF RURAL SETTLEMENT IN SOMERSET. By B. M. Swainson. *Geography*, 1944, 29 (*1*) : 1-8. Diagrams.

THE GUADAJOZ BASIN. Continuing previous hydrographic studies in southern Spain, A. Revenga Carbonnel (*Estudios Geográficos*, 1943, 4 (*12*) : 449-493) describes the drainage system of the river Guadajoz, a tributary of the Guadalquivir, to the south-east of Córdoba. The basin covers an area of 2445 square kilometres ; orographical and geological features are brought into relation with the river and stream profiles which are discussed in detail.

THE ARTISAN ELEMENT IN THE SLAV COUNTRIES. By Mrs. J. A. Steers (H. G. Wanklyn). *Geographical Journal*, 1944, 103 (*3*) : 101-119.

ASKANIA NOVA NATURE RESERVE. The nature reserve at Askania Nova near Melitopol comprised an extensive area of the Southern Ukrainian steppe, where numerous species of indigenous and introduced animals have been bred under natural conditions. A biological station, museum, and library were maintained, and important results of acclimatisation and hybridisation experiments were published for many years. According to a note in *Nature* (January 15, 1944), the animals have been destroyed wholesale by the Germans ; some of the more valuable animals and most of the museum collections were removed to Germany under the supervision of experts. The library and some collections were burnt.

ASIA

TURKISH PROGRESS. Industrial and commercial progress in Turkey during the last quarter of a century is reviewed by G. Crabbe in the *Journal of the Royal Central Asian Society* (1944, 31 (*1*) : 48-63), with sketch-maps of Turkey in 1918, 1920, and 1943.

THE LEBANON. Geography, history, and political economy of the Lebanon are reviewed by W. B. Fish (*Geographical Review*, April, 1944 : 235-258, 15 figs.). The main problems facing the country are the organisation of agriculture and development of the tourist trade, the dissolution of the discord between the Christian and Moslem population, and political autonomy.

JACOTIN'S MAP OF PALESTINE. During Napoleon's campaign in 1799 a survey, or compass traverse, of Palestine was made by Colonel M. Jacotin, the director of the French Military Survey Corps in Egypt. A 1 : 100,000 map in six sheets, engraved on copper-plate, was published in the atlas forming part of the *Description de l'Égypte* containing the scientific records obtained during the campaign. The second edition of the atlas (1826) also contains a generalised version of the map in three sheets on the scale 1 : 1,000,000. These maps are discussed by D. H. Kallner (*Palestine Exploration Quarterly*, January-April, 1944 : 157-163. 1 pl.), who points out that a number of errors have been repeated in later maps of Palestine. Only one part of Jacotin's map was actually surveyed, the other was compiled from various sources.

SHORT HISTORY OF PALESTINIAN EXCAVATION. By M. E. Kirk. *Palestine Exploration Quarterly*, January-April, 1944 : 131-144.

KING SOLOMON'S MINES. At numerous places in the Wadi Araba, between the Dead Sea and the Gulf of Aqaba, American archæologists have found ancient sites where copper and

iron were mined and smelted, in the " land whose stones are iron, and out of whose hills you can dig copper," to modify Deuteronomy. The story of these excavations, and of archæological discoveries in Trans-Jordan, is told in *The National Geographic Magazine* (1944, 85 (*2*) : 233-256) by Dr. Nelson Glueck. Pertinent biblical references further led to the discovery and excavation of Solomon's seaport of Ezion-geber, concealed in the ancient mound of Tell el-Kheleifeh at the head of the Gulf of Aqaba. The first building excavated was a most elaborate smelter supplied with forced draught by the local steady winds which blew through the flue holes. Many other discoveries made on the trail of King Solomon's mines are described in this well-illustrated article.

AGRICULTURAL PRODUCTION AND FOOD CONSUMPTION IN IRAN. By A. I. Tannous. *Foreign Agriculture*, 1944, 8 (*2*) : 27-42. 1 map.

ALBIRUNI'S GEOGRAPHY OF INDIA. Abu Raihan Muhammed bin Ahmad, or Albiruni, born near Khiva A.D. 973, was the most eminent Muslim scientist and historian of his day. His keen power of observation and wide range of knowledge are reflected in his works, notably in his monumental *Kitabul Hind*, the result of his journeys and studies in India. Using the English translation (1914), Professoi Nafis Ahmed has reconstructed (*Calcutta Geographical Review*, 1943, 5 : 39-46, 153-158) the regional geography of India from Albiruni's scattered observations, which range from astronomy to trade and communications, from a correct interpretation of tidal phenomena and curvature of the earth to the influence of geographical factors upon human affairs.

POPULATION DENSITY IN TWO DISTRICTS OF INDIA. A geographical interpretation of the distribution of population in two typical districts, Nadia in Bengal and Tinnevelley in Madras, is presented by S. P. Chatterjee and the late A. T. Ganguli in the *Calcutta Geographical Review* (1943, 5 : 116-125. 2 sketch maps).

AGRICULTURE IN CEYLON. Topography, climate, soils, land utilisation, population and social conditions, crops and the live-stock industry are surveyed by W. I. Ladejinsky in *Foreign Agriculture* (1944, 8 (*1*) : 3-20). Agricultural economy in Ceylon is dominated by large-scale, primarily European, plantation farming for export. The low state of native farming is reflected by the production of less than one-third of the island's food requirements. The author stresses the importance, and some of the difficulties, of the problem of improving the welfare of the native population by more efficient food production without neglecting development of foreign trade.

GEOGRAPHIC RESEARCH IN CHINA. The progress made by Chinese geographers during the past thirty years has not been fully appreciated outside China. A review of some of their more important activities, therefore, is of considerable value. Professor Chi-Yun Chang, head of the Department of History and Geography of National Chekiang University, has summarised in *Annals of the Association of American Geographers* (1944, 34 (*1*) : 47-62) the results and trends of recent geographical research in China. The paper represents a progress report of studies in cartography, geophysics, geomorphology, climatology, soil survey, hydrography, oceanography, bio- and anthropo-geography, economic and political geography, historical geography and the history of geography, and regional geography. Not less remarkable is the development of the geographical departments and research institutes at the universities, the best-equipped school of geography being at the National Central University, formerly in Nanking, now in Chungking. An Education Commission of History and Geography has been established under the Ministry of Education. The advancement of geography has also been fostered by a number of Societies, notably by the National Geographical Society of China, established in 1934, and now at Chungking. Another important organisation is the China Institute of Geography, founded in Peipeh, Szechuan, in 1939.

THE ROADS OF FREE CHINA. Volunteer service with the Chinese Industrial Co-operatives led to a journey of 6000 miles by plane, bus, train, boat, truck, wheelbarrow, raft, on donkey-back, and afoot, undertaken by Josephine A. Brown, between September 1941 and January 1942. Her itinerary is described and amply illustrated in *The National Geographic Magazine* (1944, 85 (*3*) : 355-384). It extended from Hong-Kong to Lanchow, on the north-west highway, and Loyang, in Honan, back to Chungking, and over the Burma Road to India. There were many side trips to villages. Both narrative and photographs provide perhaps more than a glimpse of life and work in war-time China.

THE PORT OF MACAO. The development of Hong-Kong deprived Macao of much of its importance as an entrepôt. But Portuguese trade with China and the East Indies, more particularly with Timor, amply justifies the provision of adequate port facilities in Macao. Actual and projected harbour works are described by Admiral Hugo de Lacerda (*Sociedade de Geografia de Lisboa, Boletim*, 1944 (*1-2*) : 11-34. Map, 1 : 40,000).

THE CHINESE IN SOUTH-EAST ASIA. It is not generally realised that the transatlantic migration of Europeans is paralleled, though on a smaller scale, by a migration emanating from China during the past hundred years. To-day, perhaps fifteen million Chinese live outside China. The settlement of Chinese in the Nan Yang, or South Seas, comprising the mainland countries of French Indo-China, Thailand, Burma, and Malaya, and the island domains of the East Indies, is described in a paper (*Geographical Review*, April, 1944 : 196-217 ; cartograms) by L. Unger. A knowledge of the contribution made by the Chinese towards the development of south-east Asia and a clear understanding of their position are essential in planning the future of the region.

CLIMATE DATA FOR MANCHURIA. The Manchurian climate is one of the most extreme, for its latitude, in the world. Precipitation varies from a little under 400 mm. in the north-west to 1000 mm. on the southern coast ; the highest recorded maximum temperature is 43° C., the lowest

minimum, −45·9° C. These and numerous other data, previously published in *Land Utilisation in China*, are embodied in an article by B. Burgoyne Chapman (*Australian Geographer*, 1943, 4 (*6*) : 175-179) and in the accompanying tables and maps referring to Manchuria and Jehol.

JAPAN AND THE PACIFIC. The monstrous regimentation of the Japanese people is described by J. C. Grew, United States Ambassador in Tokyo until the outbreak of war. The article (*National Geographic Magazine*, 1944, 85 (*4*) : 385-414) is illustrated by 29 photographs and by large-scale maps of the strategic isles of the Pacific. Attention is drawn to a new National Geographic map, measuring 34½ by 26½ inches, of Japan and adjacent regions of Asia and the Pacific Ocean, with Tokyo at its centre ; five insets show industrial centres of Japan on a scale of 16 miles to the inch, eight times larger than the scale of the main map.

AFRICA

NOTES ON THE CLIMATE OF THE COASTAL FRINGE OF NORTH AFRICA. By A. G. Ballert and M. C. George. *Journal of Geography*, 1944, 43 (*3*) : 97-107. Graphs.

EARLY MAN IN EAST AFRICA. Systematic exploration of ancient lake beds near Mount Olorgasaile, 41 miles from Nairobi, has revealed the presence of deposits alternating with lake beds and containing abundant signs of occupation by Acheulian man. These discoveries by Dr. L. S. B. Leakey are briefly recounted in a note (*African World*, 1944, 167 (*2166*) : 117), and also include important evidence of the existence of a flake-culture in Middle Pleistocene deposits. It is anticipated that further excavations will lead to many other significant finds.

ILMENORUTILE FROM SIERRA LEONE. Probably the first record of ilmenorutile, a mineral containing titanium, columbium, tantalum, and iron, in West Africa is contained in the report of the discovery of appreciable quantities in the alluvial deposits near Sakasakala on the Tonkolili River, 110 miles E.N.E. of Freetown (*Bulletin of the Imperial Institute*, 1944, 42 (*1*) : 45-47). Construction of a railway to the Tonkolili iron-ore deposits is adumbrated.

SIERRA LEONE RICE EXPERIMENT. Experiments since 1938 demonstrate that good rice may be grown on empoldered tidal flats in Sierra Leone. According to a note in *The African World* of February 5, 1944, 37½ bushels of paddy per acre have been obtained, but the yield is expected to improve with time. Land reclamation by modern methods might lead to large-scale rice production.

CLIMATIC ANOMALIES ON THE ACCRA PLAIN. By C. G. Wise. *Geography*, 1944, 29 (*2*) : 35-38.

BRITISH ENTERPRISE ON THE NIGER. An article (*African World*, 166 (*2151*) : 69). R. Nelson reviews the activities of the pioneer traders, the frustration of German designs, and the consolidation of British interests leading to the formation of the Royal Niger Company.

COLUMBITE MINING IN NORTHERN NIGERIA. Columbite, a complex tantalum and niobium ore found in conjunction with cassiterite, is used in the production of special steels and in the manufacture of exhaust systems of aircraft. A note in the *African World* of March 4, 1944, states that alluvial deposits in Nigeria are now being mined.

GERMANS IN THE CAMEROONS. The story of the German occupation of Togoland and Cameroon and of the activities of Dr. Nachtigal in 1884 is retold by R. Nelson (*African World*, 166 (*2156*) : 153).

THE BID FOR THE CONGO. The activities and rivalry of Stanley and de Brazza are briefly reviewed by R. Nelson (*African World*, 166 (*2147*) : 4), and an account is given of some of the international disputes which came to an end with the establishment of the Congo Free State.

NATIVE WITCHCRAFT IN SOUTH AFRICA. By W. L. Speight (*African World*, 1944, 166 (*2154*) : 121).

AMERICA

OIL IN THE MACKENZIE VALLEY. The presence of *petrolium* (*sic*) near the river that bears his name was noted by Alexander Mackenzie. The first well was drilled in 1920, and developments since then have been hastened by the demand for oil in connection with the establishment of air-fields and the Alaska Highway. The oil-field at Norman and the construction of pipe-lines to the refinery at Whitehorse form the subject of a paper by Trevor Lloyd (*Geographical Review*, 1944, 34 (*2*) : 275-307. 19 figs.). Much detailed information, which includes statistics of production, is given.

INDUSTRIAL TRENDS IN THE PACIFIC NORTH-WEST. Recent industrial developments in Oregon, Washington, and Idaho do not merely represent a temporary reaction to war-time exigency but reflect a more permanent trend due to a growing awareness of the geographical unity of the Pacific North-West. The focal areas of these developments are in the Puget Lowland, the Willamette Valley, and in some outlying centres. The distributional pattern of the forest and mineral industries and recent hydro-electric installations are described by O. W. Freeman and H. F. Raup (*Journal of Geography*, 1944, 43 (5) : 175-184. 1 map). It is apparent that industrial activities of Seattle, Tacoma, and other coastal ports have been greatly stimulated. In eastern Washington, the character of Spokane as a distributing centre has been modified since 1940 by the introduction of plants for the processing of metals. Power from the Bonneville Dam has

effected very considerable changes in the Portland-Vancouver area. The whole lower Columbia River valley may become highly industrialised in the near future ; even now, a number of agricultural communities are being displaced by industrial developments. Transportation facilities are being provided accordingly, as witness the extension of deep-water navigation up the Columbia River to The Dalles, 188 miles inland.

NANTUCKET. The charm of Nantucket and the history of the island from the early whaling days onwards are described by W. H. Nicholas in *The National Geographic Magazine* (1944, 85 (*4*) : 433-458 ; illustrated).

THE GREAT LAKES FISHERIES. According to the report of the International Board of Inquiry for the Great Lakes Fisheries, consisting of two members from Canada and two from the United States, Canada's share in the fishery yield is about one-fourth of the total of some 110,000,000 pounds annually. As reported in *Science* of January 7, 1944, the total yield of the lakes has not declined markedly during the past half century, but the bulk of the catches now consists of the less valuable species, the sturgeon being commercially extinct, while certain other valuable fishes once abundant are taken in some restricted areas. The majority of the fishermen of the Great Lakes favour unified control, and the International Board recommended joint action by the U.S.A. and Canada to preserve and develop the fishing industry.

EFFECT OF SEDIMENTATION ON FLOODS IN THE KICKAPOO VALLEY, WISCONSIN. Effects of soil erosion in increasing inundation areas through flood plain sedimentation have been intensively studied by S. C. Happ (*Journal of Geology*, 52 (*1*) : 53-68) in the drainage basin of the Kickapoo River, a tributary of the Wisconsin River. Flood damage is becoming more frequent and extensive. Probable future increases in flooding were computed for seven reaches of the valley. These quantitative studies have a practical bearing on flood problems elsewhere.

POTASH DEPOSITS IN UTAH. Exploratory borings made by an oil company some twenty years ago revealed the presence of potash- and magnesium-containing minerals in eastern Utah. Since the outbreak of war the U.S. Defence Plant Corporation discovered three beds of potash minerals at depths between 3300 and 4200 ft. According to a report by B. W. Dyer, of the U.S. Geological Survey, mentioned in *Science* (99 (*2565*) : Suppl., p. 12), the beds are underlying a large area ; the maximum thickness of the most important bed is more than 90 ft. Transportation is facilitated by the proximity of the Denver and Rio Grande Railroad.

CALIFORNIAN DATES. Date growing on a major scale is now the principal industry of the Coachella Valley, which lies north of Imperial Valley, California. Deep wells are the source of irrigation. An item in *Science* (February 18, 1944) mentions a date crop of nearly 20,000,000 pounds. Unmarketable dates are used in producing industrial alcohol.

A SUGAR BOWL IN FLORIDA. As early as 1700, sugar was manufactured in the St. Augustine and New Smyrna areas of Florida. More ambitious enterprises in the Kissimmee River valley and on the south-west shore of Lake Okeechobee during the second half of the nineteenth century proved unsuccessful. With the introduction of adequate draining and mechanised cultivation, cane production on the fertile peat and muck soils rimming the south shore of Lake Okeechobee has increased to 873,809 tons in 1941, the yield being equivalent to 3·5 tons of raw sugar per acre. The nature and importance of this area are described by L. LeMar Stephan (*Journal of Geography*, 1944, 43 (*2*) : 49-62. 9 figs.).

THE MUSKRAT INDUSTRY OF LOUISIANA. The marsh lands of the Gulf Coast of Louisiana, formerly considered to be valueless, are now estimated to furnish a living to at least one hundred thousand persons, owing to the development of the muskrat fur and ancillary industries. In an illustrated article (*Journal of Geography*, 1944, 43 (*5*) : 185-195), H. J. Chatterton describes the habits of the muskrat and trapping methods, and gives statistical data of pelt production for the past thirty years. 4,076,785 muskrats were obtained in 1942-1943, the total value of the pelts being $4,790,606. The meat of the muskrat and the musk are also marketable.

ADJUSTMENT OF AGRICULTURE TO ITS ENVIRONMENT. In a presidential address to the Association of American Geographers, published in the *Annals* of the Association (1943, 33 (*4*) : 163-198. 21 figs.), H. H. Bennett discussed the adjustments between land use and land capability. He proposed an accelerated programme of soil and water conservation, drainage, better utilisation of water resources, education in the knowledge of basic agricultural resources, investigation of the relations between soil health and human health, and improvement of western range conditions in the United States.

MEXICAN ISLANDS. The little-known islands off the Pacific coast of Mexico are of potential economic importance. A note in *Commercial America* (1944, 40 (*9*) : 9) refers to the possibilities for game and commercial fishing in the volcanic Revilla Gigedo group, to goat hide and meat production in the Coronado Islands, the scenic beauty of the islands at the entrance to Vizcaino Bay, and to valuable timber and pearl oyster beds in the island group in the Gulf of California. There are considerable deposits of gypsum and talc on San Marcos, and other unexploited minerals on islands further to the south, which also offer numerous attractions to the naturalist and tourist.

A NEW MOUNTAIN RANGE. The Tertiary volcanoes of Mexico, from Popocatepetl to Zamora, were built up on an east-west line behind a mountain range parallel to the coast of the sea that then separated North from South America. At the present time a new range is rising parallel to the Pacific Ocean and parallel to the series of new volcanoes between Cape Corrientes

and southern Costa Rica. The northern, Mexican, part of the rising anticline is backed by the youthful volcanoes of which El Paricutín (*S.G.M.* 60 (*1*) : 25) is the youngest and is separated by the Gulf of Tehuantepec from the southern part, the Sierra Madre del Sur, a notable region of earthquakes. Professor W. H. Hobbs (*Science*, 1944, *99* (*2572*) : 287-290. Map) summarises the relevant data and also refers to the synclinal trough 3000-3500 fathoms in depth and seventy to one hundred miles offshore from the rising ridge. Because of the break in the range at the Gulf of Tehuantepec a future second isthmian canal should be built there and not through the earthquake zone and rising range in Nicaragua.

A DESCRIPTION OF THIRTY TOWNS IN YUCATAN, MEXICO. By M. Steggerda. *Smithsonian Institution, Bureau of American Ethnology*, 1943, Bulletin 136 : 227-248. 1 map. 18 figs.

THE DOMINICAN REPUBLIC. Entitled "The Land Columbus Loved," an article by O. P. Newman in *The National Geographic Magazine* (1944, 85 (*2*) : 197-244) deals with the eastern end of Hispaniola. The description of a land of plenty is supplemented by two maps and by illustrations, including eleven photographs in natural colour, by B. A. Stewart.

AGRICULTURAL POSSIBILITIES IN NORTH-WESTERN VENEZUELA. The factors influencing the agricultural development of Venezuela are examined in a paper by W. E. Rudolph (*Geographical Review*, 34 (*1*) : 36-56. 16 figs.). The states of Lara, Falcón, and Zulia, where the author resided in 1938 and 1939, offer considerable prospects of economic success. Potential farming regions and differences in their climate and soil conditions are reviewed in relation to crops and stock raising. So far, forest products have been of little importance. Irrigation, markets, means of transportation, and control of tropical diseases are also discussed. The potential mineral wealth of the region will affect agricultural progress. The climatic advantages of the highlands east of Lake Maracaibo will have a marked influence upon industrial and agricultural settlement.

THE BATTLE OF THE AMAZON. The inter-American rubber development programme, aiming at an expansion of production to offset the loss of supplies in Asia, involves the struggle against the natural obstacles adumbrated in the title of the article. U.S. agencies working in close co-operation with Brazilian organisations supply the doctors, engineers, and agriculturists required to form the spearhead of the large labour forces necessary to obtain a substantial supply of rubber and to overcome the numerous difficulties of colonisation. J. C. McClintock (*Journal of Geography*, 43 (*1*) : 27-33) provides some interesting information gained at first hand in Manáos and about transport and health services in the Amazon basin.

OCEAN-TO-AMAZON HIGHWAY. About two-thirds of the total area of Peru are in the basin of the Amazon, but it is only in recent years that the rich resources of the Peruvian Oriente have been rendered accessible from the Pacific coast. Several highways are under construction. The 522-mile Lima-Pucallpa highway was completed in 1943, passenger coaches now making the run in two days with an overnight stop at Huanuco. The 650 miles from Pucallpa to Iquitos are covered in three days by river steamer. Formerly travel by this route was so arduous that the detour via the Panama Canal and 5000 miles up the Amazon was preferred. An account of the highway is given by Major-General J. L. Schley (*Journal of Geography*, 1944, 43 (*5*) : 161-167), who also briefly describes the Olmos-Marañon highway in the north, the Urcos and Huambutio highways in the Department of Madre de Dios, and highways scheduled for future construction. The Pan American Highway, running for 1761 miles through the length of Peru, is nearly completed.

THE PERUVIAN FISHERIES. By R. H. Fiedler (*Geographical Review*, 1944, 34 (*1*) : 96-119. 16 figs.).

BOLIVIAN TIN. According to Science Service (*Science*, 99 (*2564*) : Suppl., p. 10), tin ore constitutes over 75 per cent. of Bolivia's exports, other important mining products being tungsten, antimony, copper, silver, lead, zinc, bismuth, and petroleum. Tin became the important metal after access to Asiatic sources had been cut off. As Bolivia has no tin smelters of its own, a large smelter for Bolivian ore has been constructed as a war measure in Texas. In addition to purchasing tin and tungsten, the U.S. government granted Bolivia a loan of $25,000,000 for the construction of four major highways, the development of the sugar industry, and other economic purposes.

FORESTRY MEASURES IN URUGUAY. Immediate steps are being taken towards reforestation and forest conservation. A note in the *Bulletin of the Pan American Union*, January 1944, very briefly refers to impending legislation, research on tree products, and efforts to facilitate planting of trees by authorities and private citizens. Experts are touring the country in a railway car equipped for demonstrations.

AUSTRALASIA

AUSTRALIAN FORESTS. A. M. Goebel (*Journal of Geography*, 43 (*1*) : 18-27) discusses the distribution and exploitation of forests in Australia, especially in New South Wales.

SEA-WEED PRODUCTS IN AUSTRALIA. The production of agar for meat canning and bacteriological purposes, also of potash, from sea-weeds in Australian waters has been stimulated by war-time requirements. Studies on the distribution and utilisation of red algae (E. J. F. Wood and V. M. Jones, *Nature*, February 26, 1944) are in progress. It is estimated that the supply of *Gracilaria confervoides* in shallow water in New South Wales and Southern Queensland area is adequate for agar production, and local Australian demand could be met within a year. Production of iodine and potash from sea-weeds is considered to be payable only in war-time.

LAND UTILISATION SURVEYS IN THE KURRAJONG-WINDSOR DISTRICT, NEW SOUTH WALES. By W. H. Maze. *Australian Geographer*, 1943, 4 (*6*) : 155-174. 3 pl. 6 figs.

CHATHAM ISLAND PEAT. The physical features of Chatham Island, about 536 miles east of Christchurch, N.Z., are outlined by E. O. Macpherson (*N.Z. Journal of Science and Technology*, 1943, 25B (*1*) : 1-44), who made a survey of the extensive peat deposits. Some of the latter are formed in marine and fresh-water marshes, but by far the most important peat beds occur between 100 and 600 feet above sea-level. Peat from widely separated localities, and analysed by W. G. Hughson, yielded an average crude wax content of 9·4 per cent. It is suggested that a peat-wax industry in Chatham Island would supplement the grazing industry, which is handicapped by high freight rates on sheep to New Zealand markets, and check the annual decline in population.

THE PRODUCTION AND TRADE OF FIJI. By G. M. Coombs. *Geography*, 1944, 29 (*1*) : 8-14. 1 graph.

PAPUA AND THE PAPUANS. The native background to the Papuan campaign and its influence on the future of the Territory are described by Hon. the Rev. J. D. Bodger in *The Australian Geographer*, November, 1943 (4 (*6*) : 141-154. 1 sketch-map. 7 figs.). He emphasises the danger, previously indicated by Sir Hubert Murray, of using the native as a means towards the development of the country in the interests of non-resident capitalism even in its most benevolent guise. Education, hygiene, the establishment of research stations, the introduction of cereal and other crops and of improved methods of cultivation, supply and training in the use of modern implements, would all contribute to the welfare of the Papuans, and would also be an expression of our gratitude for their services and sufferings during the war.

NEW CALEDONIA. By Elizabeth Stadtlander. *Journal of Geography*, 1944, 43 (*4*) : 145-152.

POLAR REGIONS

SEA ICE. A list of sea-ice definitions and of other terms associated with ice and ice navigation has been published in *The Polar Record* (1944, 4 (*27*) : 126-133). An account is given of the formation and movement of sea ice.

MOVEMENTS OF THE *DISCOVERY* COMMITTEE'S SHIPS. The main tracks of the *Discovery* (1926-27), *William Scoresby* (1926-38), and *Discovery II* (1930-38) in the area of the Falkland Islands Dependencies are shown on a chart, accompanied by a note, by N. A. Mackintosh in *The Polar Record* (1944, 4 (*27*) : 141-142). To show complete details of the ships' movements during coastal surveys of the various island groups, separate maps on a considerably larger scale would be necessary.

CARTOGRAPHY

STRUCTURAL PROPERTIES OF MAPS. The problem of presenting the curved surface of the earth on the plane, and linear, angular, and areal deformations affecting the selection of map projections for particular purposes, are discussed in considerable detail by F. J. Marschner (*Annals of the Association of American Geographers*, 1944, 34 (*1*) : 1-46. 8 figs.), with special reference to the structural properties of medium- and small-scale maps. The relative reliability of projections for a map of the United States is illustrated by comparison of the Lambert conformal conic and Albers equal-area conic projections, both with the same two standard parallels, 30° and 46° N. The utilitarian value of maps on equal-area projections is stressed.

OUR LOPSIDED EARTH is the title of an article by E. Raisz (*Journal of Geography*, 1944, 43 (*3*) : 81-91. 5 figs.), in which are described various methods of studying the uneven distribution of geographically interesting features. According to one method, the median point of land areas lies near Smyrna, or if Antarctica be disregarded, near Tarnopol. By immersing in water a very light globe, with the land areas covered by a thin sheet of lead, and marking the top, the antipodal point represents the centre of gravity of land areas, located at 43° 3′ N, 28° 20′ E., near Balcic in Romania. The distribution of land around this centre of gravity is plotted on a cylindrical equal-area projection of the globe. The median point of the earth's population both in 1900 and 1940 is located a little to the south-east of Lahore. Other distributional centres discussed are the centre of national wealth, in the eastern Pyrenees, and that of foreign trade, near the border of France, Switzerland, and Italy.

GENERAL

POST-WAR AIR ROUTES. An interesting discussion on the geography of post-war air routes is reported in *The Geographical Journal* (1944, 103 (*3*) : 89-100) ; Lord Brabazon of Tara, Mr. A. R. Hinks, Sir Henry Tizard, Sir Alan Cobham, Dr. Dudley Stamp, and Prof. Austin Miller took part.

INTERNATIONAL ASPECTS OF CONSERVATION. Depletion of natural resources, of plants and animals, soils and minerals, is more evident in the first stage of human settlement than in older lands where methods of conservation become of vital importance. That resources are exhaustible in an island environment is obvious, and most of the work of conservation has been local or regional in scope. However, the same problem arises everywhere and can only be solved

by international co-operation. The international aspects of conservation, in relation to geographic diversities, nationalism, and trade, are discussed by Professor J. Osborn Fuller in the *Journal of Geography* (1944, 43 (*4*) : 121-131). The significance of certain resource groups is stated in more detail. But "all suggestions for international efforts towards resource conservation fade into comparative insignificance beside the one calling for the elimination of war as a means of settling disputes."

THE GEOLOGICAL BASIS OF PLANNING. The importance of applying geology to planning schemes is stressed by E. Morton in the *Journal of the Town Planning Institute* (1944, 30 (*2*) : 44-54). The aspects considered include land forms, nature of the soils and subsoils, the distribution of minerals, sources of water supplies, and the stability of slopes and cliffs.

FUNCTION AND FUTURE OF COLONIAL GEOLOGICAL SURVEYS. By V. A. Eyles, *Nature*, 1944, 153 (*3879*) : 173-276.

HUMAN INFLUENCE ON SEISMIC MOVEMENTS. An article by W. Knoche in *Anales de la Sociedad Científica Argentina*, reviewed in *Nature*, February 19, 1944, suggests that earth movements may be influenced by human activity, directly by the weight of great cities in unstable regions, such as Tokyo and San Francisco, and indirectly by deforestation and other factors controlled by man, leading to denudation and displacement of matter through fluvial transportation, releasing and increasing weight over parts of the earth's crust.

EDUCATIONAL

CLOUDS. A graphic method of showing the names, form, and, more especially, the interrelationship of the principal cloud types has been found useful in teaching, and is described by J. O. Fuller (*Journal of Geography*, 1944, 43 (*4*) : 132-139. 13 figs.). The probable type is determined from such a cloud diagram, an accurate identification being made by referring to photographs and to a special chart.

REVIEWS OF BOOKS

EUROPE

The Inscriptions of Pictland. An Essay on the Sculptured and Inscribed Stones of the North-East and North of Scotland : With Other Writings and Collections. By Francis C. Diack. Edited by William M. Alexander and John Macdonald. Crown 4to. Pp. xix+207+15. Illustrated. Aberdeen : Third Spalding Club, 1944.

This volume is intended to be fully representative of the writings of Francis C. Diack. The main title applies particularly to the first, and most important, section of the book. This is the most complete account we have yet had of the Pictish sculptured stones of Scotland.

As to the object of the symbols, Diack rejects the old theory that they had a religious significance, and advances an entirely new view, namely, that they indicate the political and social standing of the person represented. Of the symbols themselves the author gives views of some fifty different kinds, and of these the most often repeated are the crescent and V-rod (60 times), double disc and Z-rod (50 times), the bear (34 times), bull (8 times), serpent and Z-rod (10 times), fish (14 times), eagle (11 times), wolf (3 times), seal (7 times), and the horse only once.

The editors say : " If Diack's reading and interpretation of these inscriptions is correct, he has made a substantial—and vital—addition to the known material regarding the Pictish language." Diack also deals with the Ogam writings and gives the symbols used to represent the Roman letters. He was a finished Celtic scholar, and in this volume we have a list of the Celtic place-names of the north-eastern Highlands. The volume is well illustrated. J. M.

Highland Naturalist. By Dugald Macintyre. Demy 8vo. Pp. 240. 8 figs. London : Seeley, Service and Co. Ltd., 1944. *Price* 12*s.* 6*d.*

" Highland Naturalist," who, as " Highland Gamekeeper " delighted so many readers by his pen pictures of wild life in Scotland, now leads them still farther, to share with him the delight of watching the doings, not only of badgers and otters, eagles and herons, but of fish and frogs, wood-wasps and lobsters. One only wishes that some of the thumb-nail sketches were a little longer. One wonders too why the otter's ugly foot has been chosen to illustrate the cover, rather than the infinitely more elegant heron or even the golden eagle. These, however, are minor defects which merely impel the reader to hope that Mr. Dugald Macintyre will not only complete a trilogy of Highland studies, but will continue to record his observations for the pleasure and benefit of unfortunate town-dwellers. D. G.

The Romance of Bristol. By A. Dorothy Holmes. Crown 8vo. Pp. 32. 14 illustrations. Worcester : Littlebury and Co., Ltd., The Worcester Press, 1944.

For many years the author has endeavoured to interest people in the preservation of the English countryside and mediaeval buildings. In the latest of her pleasant booklets, she outlines the history, and provides some attractive sketches, of the historic buildings of Bristol. Many of these

landmarks of former craftsmanship went up in flames during the nights of November 24th and December 2nd, 1940. J. H. K.

This Norway. By Ernst Schwitters. Text by Roi B. Nyquist. Crown 4to. Pp. 124. 144 illustrations. Published by authority of the Royal Norwegian Government Information Office. London : Hutchinson and Co. (Publishers) Ltd., n.d. *Price 12s 6d.*

All who are interested in Norway will welcome the illustrations and textual account of the land and of the people and their activities. To those who knew Norway before its profanation by the enemy, the photographs will revive happy and nostalgic memories. Those who have no knowledge of Norway will profit by studying this book.

The illustrations are good indeed. Their selection has been based on the idea that a photograph should be a symbol rather than a correct illustration of details, and not on an effort to present a series of views from the Naze to the North Cape. For this reason, many of the photographs are not labelled ; they symbolise a theme summarised in the text, as fishing, architecture, industry, and so on. The anonymity of other photographs tends to emphasise their similarity with pictures of Scotland.

The text, too, provides a glimpse of Norwegian achievement in its many aspects, in seafaring and exploration, fishing and farming, in trade and industry, in the arts and sciences, and social services. That the children of the wealthy and poor attended the same elementary schools, and admission to higher education depended on success in these schools, is a criterion of the social progress accomplished. *Ja, vi elsker dette landet.* J. H. K.

The Civilization of Spain. By J. B. Trend. Fcap. 8vo. Pp. 223. 4 sketch maps. London : Humphrey Milford, Oxford University Press, 1944. *Price 3s. 6d.*

An integration of the history of Spain and a history of Spanish civilisation was achieved, possibly for the first time, by Professor Rafael Altamira in a book of which an English translation was published in 1930. Not less remarkable is the description by Professor Trend of the factors which have influenced Spanish thought from early times to the days too near to afford a just perspective. To present a history of the civilisation of Spain within the space allotted to a volume of *The Home University Library*, and in an engaging style, is no mean feat. Even the bibliography, extending to some fourteen pages, is not an arid list of references, but a guide to the reader in extending the field of vision obtained in each chapter. J. H. K.

ASIA

Peoples of India. By William H. Gilbert, Jr. Med. 8vo. Pp. iv+86. 21 plates. 3 maps. Smithsonian Institution War Background Studies No. 18. Washington, D.C. : Smithsonian Institution, 1944.

This publication is an excellent example of the American method of presenting knowledge in an orderly and compressed fashion. An extensive range of topics is covered, for it is no mere anthropological survey. The terseness of style and abundance of facts provide difficult reading.

The section " Geography," one of the weakest, exemplifies the lack as yet of any synthesised system of natural regions as a basis for detailed studies. The author seldom lets himself be drawn into comment except wisely, as in his reference to a possible " uprising " of primitive groups. The regional entity of Dravidistan is given equality with notoriously advertised Pakistan ; the foot-note might have included Kevala for the Malayalams together with Andhra for the Telugus. Telingana, instead of Andhra, is considerably less widely used in South India.

In explaining caste to the American citizen, Mr. Gilbert ventures on a misleading comparison with American social strata. The Brahmin does not now correspond to the clergy and would loathe comparison with Negro Baptists. Many Vaisyas are superior to the military castes, and certain Chettys and Mudaliars would live in an upper storey of the author's skyscraper with the American capitalists. Classed with hobos, prostitutes, and gangsters, the Untouchables would feel disgraced.

Certain omissions are regrettable if inevitable. India's women are perhaps her greatest asset to-day, but their emancipation finds no place. Among the Native States, Travancore is neglected, with its matriarchal dynasty, its ancient Syrian Church, and relatively literate population.

Summarising often gives a wrong impression. For instance, in the section on caste areas the list is numerical and misleading. The Brahmin is omitted in Madras because of the overwhelming majority of Adi-Dravidas, yet he ultimately controls the destiny of the Province. Again, it is taken for granted that Government is responsible for education, whereas the missionary organisations are responsible for a remarkable proportion, as in South India where more than half the colleges for women are under their control. Apart from the Parsees, the Christian community is the most literate and has an influence on the life and thought of the country far in excess of its numerical proportion.

In his conclusion, is the author justified in claiming caste as a system of social adjustment comparing rather favourably with the European system of warring territorial nationalities ? With some sixty million Untouchables outside the pale, social adjustment seems a misnomer. The concluding paragraph makes one wonder whether Mr. Gilbert has any first-hand knowledge of the appallingly low standard of much of Indian village life. War-time industries prolonged into the peace will only touch the fringe of the problem of ameliorating the poverty of vast numbers of people whose lives are yet scarcely reached by modern developments.

The illustrations are numerous and well chosen, though the maps are difficult to comprehend. The bibliography is good and useful, but such a technical survey would have had more scientific value if annotated references had been included for verifications and further study. M. S.

Burma Surgeon. By GORDON S. SEAGRAVE. Crown 8vo. Pp. 159. 12 photographs. 1 map. London : Victor Gollancz Ltd., 1944. *Price* 9*s.*

Burma has held a prominent place in the news lately, and it is easy to understand why this little book should appeal to those who desire a more intimate acquaintance with that country. In the study of a land and a people, in peace or at war, the medical observer has peculiar advantages. Dr. Gordon Seagrave has made full use of his professional knowledge and of his close association with the people of northern Burma, and although, as he remarks somewhat superfluously, " as a missionary I was a most unorthodox pain in the neck," there can be no doubt that he possessed all the attributes of the successful pioneer.

Part of his childhood was spent in Burma, where his ancestors for three generations had been missionaries, and there he, too, commenced work as a medical missionary when, after completing his medical course at Johns Hopkins University, he set out for the East in 1922, accompanied by his wife and baby daughter, and equipped with " a waste-basketful of surgical instruments." At Namkham in the Shan States he eventually built a hospital where he conducted a busy practice, and where he trained an excellent team of native nurses drawn from Karen, Kachin, and Shan sources. Thus did he prepare for the great events still to come, the construction of the Burma Road and the Battle of Burma, in each of which he and his assistants played a noble part. Step by step Dr. Seagrave unfolds his interesting story of those stirring days. Every reader may not appreciate the strong American idiom he employs, although this mode of expression gives a natural raciness to the narrative. A more justifiable criticism is that which relates to the medical details, which appear incongruous in a popular work. Intimate accounts of surgical and obstetrical procedures are hardly edifying to the non-medical reader, although, if combined with the useful hints on the treatment of cerebral malaria and other prevalent diseases, they might form a valuable nucleus for a treatise on the diseases of Burma. As it is, the squeamish reader can always skip the more lurid medical passages. In spite of these minor defects, this little work must be regarded as an excellent eyewitness's account of life on the Burma Road and of the trials endured during General Stilwell's retreat. Eventually we have the author in India, busily engaged in treating refugees, but ready to resume work in Burma as soon as conditions permit. The book is illustrated by a sketch map and by twelve well-chosen photographs. D. G.

In Javanese Waters. By H. W. PONDER. Demy 8vo. Pp. 228. 22 photographs. 4 sketch maps. London : Seeley, Service and Co. Ltd., 1944. *Price* 18*s.*

After what must have been an altogether delightful cruise by K.P.M. steamer, from Bali along the whole string of islands which divide the Timor from the Banda Seas, the author made a special visit to the Banda Group.

The tragic story attached to these islands, which ran through the seventeenth and eighteenth centuries, after the Dutch had wrested them from the Portuguese, is one of commercial greed and inhumanity. Ultimate peace came only when the natural inhabitants had been exterminated, as it came in Tasmania after the British had hunted down and killed the Tasmanians. In Banda the prize was nutmegs. The wonderful nutmeg forests were divided into " parken," each under a member of the Dutch Company and worked by slave labour. The amount of blood that was shed for nutmegs and mace is almost beyond belief. Forts were built to deal with numerous revolts, and finally Governor Coen gave the order for the extermination of the whole native population, men, women, and children. Profits were enormous ; the parkeniers became very wealthy and built themselves palaces.

At last Nature stepped in with earthquakes and volcanic explosions of great magnitude. The forests were destroyed, slave labour was also destroyed by Coen's brutal and foolish order, the market slumped, and the parkeniers were glad to sell out and go home to Holland. The forts are now in ruins, and Chinese merchants live in some of the fine houses, while a small and scattered community inhabits the islands. The whole sad history is here.

In the remaining chapters, there is a return to beautiful Bali, where also in early days the Dutch sought to coerce a proud and happy people until they committed suicide *en masse.* A chapter is devoted to the island of Ambon (Amboina) famous for its butterflies and for the naturalist Rumphius, who lived and died there. We would have been interested if reference had been made to Komono Island and its gigantic dragon lizards, but probably the K.P.M. steamers have no cause to call there. This book, like others by the same author, is most interesting. It seems to have been completed just before Javanese waters were polluted by Japan. W. L. C.

Through Japanese Barbed Wire : A Thousand-mile Trek from a Japanese Prison Camp. By GWEN PRIESTWOOD. Crown 8vo. Pp. 144. London : George G. Harrap and Co., Ltd., 1944. *Price* 8*s.* 6*d.*

Mrs. Priestwood gives a thrilling account of her escape, along with Mr. Anthony Bathurst, from the Japanese internment camp on the Stanley Peninsula after the fall of Hong-Kong. A slim volume calculated to keep its readers awake far into the small hours. Unfortunately the route taken on the daring and successful journey to Chungking cannot as yet be safely disclosed.

I. W. H.

AMERICA

Down North. By TONY UNRAET. With an Introduction by Dr. Thomas Wood, M.A., D.Mus. (Oxon.). Crown 8vo. Pp. 157. Frontispiece. Sketch Map. London: Jonathan Cape Ltd., 1944. *Price* 8*s.* 6*d.*

Sergeant Tony Unraet, a French Canadian at present serving in the Royal Canadian Army, is already known to many by his popular broadcast talks. In *Down North*, the story of his life as a trapper and backwoodsman in the forests of the North-West Territory is told in an enthralling manner. The tale is one of exciting adventure, with many perilous escapes; it is full of delightful and intimate descriptions of nature and wild life at first-hand. Dr. Thomas Wood, to whom the book is dedicated "for blazing the trail and keeping the camp-fire burning," supplies a short foreword, and has assisted the author to put into the "crisp, vivid, terse, exact" English, which is his spoken tongue, his remarkable story.

There is much information of practical value to those who aspire to a trapper's adventurous life, but in spite of his calling, Tony Unraet displays a sympathy for the creatures of the wild akin to that of Grey Owl himself. Admirers of the latter will read with pleasure such a remark as this, with which the author ends a chapter on the beaver: "But I can give this assurance; white trappers never take the beaver indiscriminately. Nor do they ever take all the beavers in one house. They will leave a couple at least. I did better than that. I found as time went on I had to leave them all." This book can be recommended to old and young alike. It will delight all lovers of wild nature and "those lovely, magical haunting names that tell of ice and snow and seeking and endeavour."

I. W. H.

Only an Ocean Between. By LELLA SECOR FLORENCE. Foreword by John G. Winant, American Ambassador to Great Britain. 9×6¼ in. Pp. 64. 32 photographs. 18 charts. London: George G. Harrap and Co. Ltd., 1943. *Price* 6*s.*

This first book in a series entitled *America and Britain* deals in popular style with land, climate, resources, and transport facilities in both countries. The author has lived and worked in the United States and in England, which are compared neither from a national nor from a neutral point of view. Isotype charts in colour, and photographs, tend to make the statistical and other information given more palatable and digestible. In the words of Mr. Winant, this book will "help to bridge whatever ocean still flows between our two countries' knowledge and understanding of one another."

J. H. K.

Venezuelan Gilt: Some South American Reminiscences. By LEONARD CARO. Demy 8vo. Pp. 196. 16 photographs. 1 map. London: Hurst and Blackett Ltd., n.d. *Price* 16*s.*

This is really the written-up or edited diary of one Ernest Mitchell, who became interested in South America when he was a young man in London, learned Spanish, and was sent as cashier to a Venezuelan copper mine. This was in 1922, so his experiences were in the time of the iniquitous President Gomez.

The author is by no means a person critical or carping; he has a saving sense of humour. But his short journey from Puerto Cabello, where he landed, to his destination at the mine was so exceedingly grim as to "take the gilt off the ginger-bread." The domestic conditions of the people are simply appalling, as here described, and venereal disease is rife.

It is a well-written book, and Mitchell certainly was a great acquisition to the small company of whites at the mine. There are some delightful sentences, as, for example: "In moments of forgetfulness, the dinner was a great success," or the more curious one, the defence of the house servant Leonor: "Don Ernesto, you know, and God knows, I committed many follies in my youth as my children can testify, but at least I never married." Mitchell, unhappily, went home suffering badly from dysentery.

W. L. C.

The Word of an Englishman (*Palabra Ingles*). By TOM CLARKE. Demy 8vo. Pp. 176. 16 photographs. London: Hutchinson and Co. (Publishers) Ltd., n.d. *Price* 15*s.*

The author is a journalist of wide experience who is asked by Mr. Edward Hulton to investigate publishing interests in South America, and especially ways of keeping alive the British traditions of journalism. From New York he flies south to Buenos Aires, and most of his activities centre round that city and Rio. He meets and is welcomed by the editors of all the leading newspapers, and finds them a little over-run by news and features and comics from North America, and very desirous of getting well-informed accounts of European affairs and of war conditions in England.

He opens a branch of the Hulton Press in Buenos Aires, and apparently supplies what is desired, but war conditions make it necessary to close down after a while by instructions from London. He flies to Santiago across the Andes and travels southwards to the level of the Patagonian plain where he enters Argentina again through a pass in the mountains and returns to the city of Good Airs. Only the northern part of this long strip of Chile is rainless. South of this is fine agricultural land and a region of lakes and woods. It is much in the hands of Germans, who, being then elated at the war successes of the Fatherland, behaved in the usual arrogant manner.

Amongst the excellent illustrations is one of the Rio Press Club, a most curious and ugly building designed so that direct sunlight cannot enter any of the fifteen floors. He flies to Bolivia and on to

Peru and Ecuador, and gives some interesting descriptions of the excavations of Inca antiquities, then to New York and home. He was only eight months in the country but his time was well filled.

W. L. C.

South American Journey. By WALDO FRANK. Crown 8vo. Pp. 215. London : Victor Gollancz Ltd., 1944. *Price* 10*s.* 6*d.*

One does not, at once, associate this journey with the war now in progress. The author clearly had already acquired many links with South America, and was asked to come from his home in the United States in order to speak to the peoples of the South American countries about how the war touched them. He travels mostly by air, and he visits Brazil and the Argentine, Uruguay, Paraguay, he " vaults " the Andes and reaches Chile and Peru, he talks to the people of Patagonia ; Bolivia and Colombia come within his ambit.

It does not appear that he is sent by any body of opinion in North America, but, as a man of letters whose judgment is respected in the south, he delivers lectures and meets everybody who is anybody. His friends are ladies of distinction, poets, sculptors, and painters. He deals with a delicate subject, and his lectures are usually listened to in rapt silence. He is enthusiastically dined and wined, but it happens sometimes that a police permit to speak does not materialise till the crowded audience is waiting beyond the advertised hour.

His writing, as we have it here, like his lectures, requires close attention. He has peculiarities of style. He cultivates the pause in this way . . . and after a few words . . . as a skilled lecturer may do. He preaches the gospel of the united Americas, but he has to do so with care. He says that each nation must fulfil its personal genius by devotion to the whole. Then he ascertains the views of those in opposition and has many talks. Attacks by newspapers amuse him.

Apart from the main object which he serves, he writes with acute observation of the people and the countries. The book is most instructive at the present juncture when, even as we write this review, we learn of the resignation of the President of the Argentine Republic and of the critical attitude of the United States.

W. L. C.

GENERAL

Let's See if the World is Round. By HAKON MIELCHE. Translated from the Danish by M. A. Michael. Demy 8vo. Pp. vi+330. Illustrated. Edinburgh and London : William Hodge and Co. Ltd., 1944. *Price* 10*s.* 6*d.*

The book was first published in 1938 and was reviewed in the *S.G.M.*, 1939, Vol. 55, No. 5, p. 299. [ED.]

BOOKS RECEIVED

The Land of Britain. The Report of the Land Utilisation Survey of Britain. Edited by L. DUDLEY STAMP, B.A., B.Sc.

Part 56. *Oxfordshire.* By MARY MARSHALL. Pp. 193-240. 17 figs. 1943. *Price* 4*s.*
Part 57. *Leicestershire.* By R. M. AUTY. Pp. 241-327. 48 figs. 1943. *Price* 4*s.*
Part 58. *Northamptonshire.* By S. H. BEAVER. Pp. 329-392. 37 figs. Part 59. *The Soke of Peterborough.* By D. M. ALLEN. Pp. 393-413. 15 figs. 1943. *Price* 4*s.*
Part 60. *Nottinghamshire.* By K. C. EDWARDS. Pp. 415-565. 74 figs. 1944. *Price* 4*s.*
Part 68. *Worcestershire.* By K. M. BUCHANAN. Pp. 405-673. 149 figs. 1944. *Price* 12*s.* 6*d.*

London : Published for the Survey by Geographical Publications Ltd.

The Pyrenees. By H. BELLOC. Crown 8vo. Pp. xxvii+246. Sketches. 22 sketch maps. London : Methuen and Co. Ltd., 4th edition, 1928. *Price* 9*s.* 6*d.*

The Struggle of the Serbs. By K. S. PAVLOVITCH. Crown 8vo. Pp. 88. Illustrated. London : Standard Art Book Co. Ltd., 1943. *Price* 5*s.*

Post-War Europe—Germany OR *Poland?* By ALLAN E. ALAN. $8\frac{1}{4} \times 5\frac{1}{4}$. Pp. 46. 1 map. London : Continental Publishers and Distributors Ltd., 1944. *Price* 3*s.*

Cyprus : Past and . . . Future. By DOROS ALASTOS. Crown 8vo. Pp. iv+75. 7 figs. London : Committee for Cyprus Affairs, 1944. *Price* 5*s.*

Canadian-American Relations, 1875-1911. By CHARLES CALLAN TANSILL. Med. 8vo. Pp. xviii+507. 3 sketch maps. New Haven : Yale University Press ; Toronto : The Ryerson Press ; London : Humphrey Milford, Oxford University Press, 1943. *Price* 23*s.* 6*d.*

The Geographical Basis of Government : especially applied to New South Wales. By J. MACDONALD HOLMES. Crown 4to. Pp. iii+168. 34 figs. Sydney and London : Angus and Robertson Ltd., 1944. *Price* 12*s.* 6*d.*

Geomorphology : An Introduction to the Study of Landforms. By C. A. COTTON. Demy 8vo. Pp. viii+505. 473 figs. Christchurch, N.Z. : Whitcombe and Tombs Ltd., 3rd ed., 1942. *Price* 25*s.*

The Oceans : Their Physics, Chemistry, and General Biology. By H. U. SVERDRUP, MARTIN W. JOHNSON, and RICHARD H. FLEMING. Demy 8vo. Pp. x+1087. 265 figs. 7 charts. Bibliography. New York : Prentice-Hall Inc., 1942. *Price* $10.00.

Soils and Men. Yearbook of Agriculture 1938. Med. 8vo. Pp. xiii+1232. Illustrated. Map. Glossary. 476 bibliographical references. Washington, D.C. : United States Department of Agriculture, 1938.

Heresies and Humours. By Major C. S. JARVIS, C.M.G., O.B.E. Demy 8vo. Pp. 176. Illustrated by R. A. Young. London : Country Life Ltd., 1943. *Price* 8*s*. 6*d*.

ROYAL SCOTTISH GEOGRAPHICAL SOCIETY

PROCEEDINGS

MEETINGS OF COUNCIL were held on May 18th, June 22nd, and July 20th, 1944.

Diploma of Fellowship : The Diploma of Fellowship of the Society was awarded to George Walker, who, in the capacity of Secretary to the Society during the past eighteen years, had rendered signal service not only to the Society but to Geography in general ; also to John B. Tait, D.Sc., Ph.D., F.R.S.E., for his research work in Oceanography in particular relation to the Hydrography of the North Sea and neighbouring waters.

University Medals : The Society's Scottish Universities Medals for 1943-44 were awarded as follows :—Edinburgh University : Barbara M. M. Stewart ; Glasgow University : Eric A. Allan ; Aberdeen University : Christina I. Chisholm.

Annual Business Meeting : The Annual General Business Meeting of the Society will be held in the Society's Rooms, Synod Hall, Edinburgh, on Wednesday, October 18th, 1944, at 5.15 p.m.

LECTURE SESSION, 1944-1945

October, November, December, 1944

EDINBURGH, *Usher Hall.*

EVENING MEETINGS.—Thursdays at 7.30 p.m. (period of full moon).

October 26th.—Sir Robert N. Reid, K.C.S.I., K.C.I.E., Governor of Assam, 1937-42, on " The North-East Frontier of India." Illustrated.

November 30th.—Dr. Hugh G. Brennan, M.A., B.Sc., L. ès L., Ph.D., on " Modern Russia." Illustrated (film).

December 21st. F. Fraser Darling, D.Sc., Ph.D., F.R.S.E., Director of the West Highland Survey, on " North Rona, a North Atlantic Island." Illustrated.

Lothian Road Church Hall.

AFTERNOON MEETINGS.—Wednesdays at 3 p.m.

October 18th.—Professor Alan G. Ogilvie, O.B.E., M.A., B.Sc., on " Geography and European Culture." Illustrated.

November 1st.—Dugald Campbell, F.R.S.G.S., on " The Nomads of North Africa." Illustrated (film and slides).

November 15th.—Professor E. B. Bailey, M.C., M.A., F.R.S., Director of Geological Survey, on " Malta." Illustrated.

December 6th.—Rev. Hope Moncrieff, M.A., on " Formosa, Past, Present, and Future." (Coloured film.)

December 13th.—Will Grant, author of " Pentland Days and Country Ways," on " The Call of the Pentlands."

GLASGOW, *Lyric Theatre.*

October 7th.—Dr. Hugh G. Brennan, M.A., B.Sc., L. ès L., Ph.D., on " Modern Russia." Illustrated (film).

October 28th.—Sir Robert N. Reid, K.C.S.I., K.C.I.E., on " The North-East Frontier of India." Illustrated.

December 2nd.—Mr. Robert M. Adam, on " National Parks for Scotland." Illustrated.

OBITUARY

It is with deep regret that news has been received of the death of the Rt. Hon. LORD POLWARTH, C.B.E., V.D., D.L., Vice-President and former President of the Royal Scottish Geographical Society.